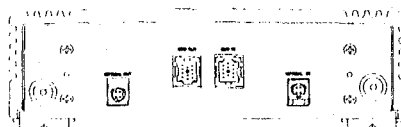


Service Manual



UNIVERSAL DIGITAL PREAMP/EQUALIZER
OPTICAL DIGITAL REFERENCE SYSTEM

RS-P50

UC,EW

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SAFETY INFORMATION (UC MODEL)

CAUTION

This service manual is intended for qualified service technicians; it is not meant for the casual do-it-yourselfer. Qualified technicians have the necessary test equipment and tools, and have been trained to properly and safely repair complex products such as those covered by this manual. Improperly performed repairs can adversely affect the safety and reliability of the product and may void the warranty. If you are not qualified to perform the repair of this product properly and safely; you should not risk trying to do so and refer the repair to a qualified service technician.

WARNING

Lead in solder used in this product is listed by the California Health and Welfare agency as a known reproductive toxicant which may cause birth defects or other reproductive harm (California Health & Safety Code, Section 25249.5). When servicing or handling circuit boards and other components which contain lead in solder, avoid unprotected skin contact with the solder. Also, when soldering do not inhale any smoke or fumes produced.

PIONEER ELECTRONIC CORPORATION 4-1, Meguro 1-Chome, Meguro-ku, Tokyo 153, Japan
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Service Manual

 **PIONEER**
The Art of Entertainment

ORDER NO.
CRT1788

UNIVERSAL DIGITAL PREAMP/EQUALIZER OPTICAL DIGITAL REFERENCE SYSTEM

RS-P50

EW8

● As to RS-P50/EW8 , refer to CRT1544 (RS-P50/EW) because of the same contents.

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4930

2. DISASSEMBLY

●Heat Sink

- 1.Remove the six screws.
- 2.Remove the heat sink.

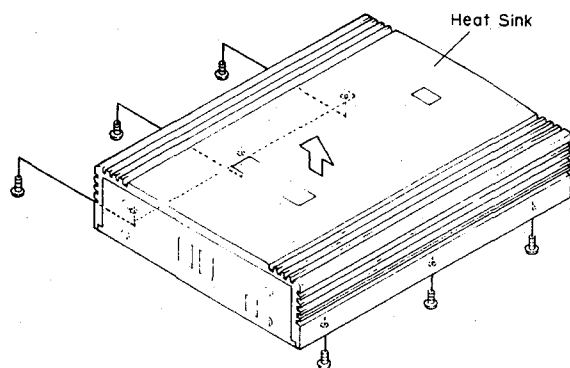


Fig.1

●Panel

- 1.Remove the eight screws.
- 2.Remove the two panels.

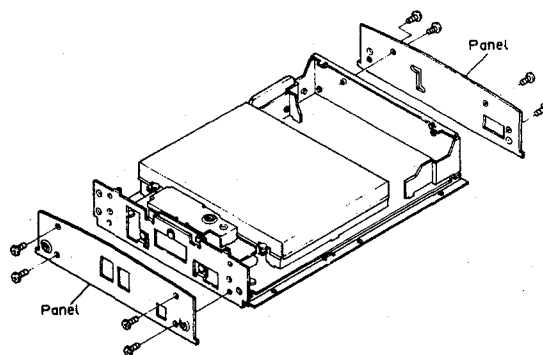


Fig.2

●Chassis

- 1.Remove the five screws.
- 2.Unbend the claws at three locations until straight.
- 3.Remove the chassis.

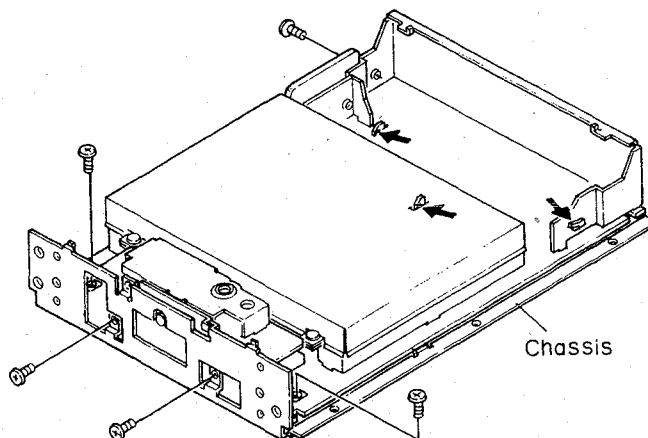
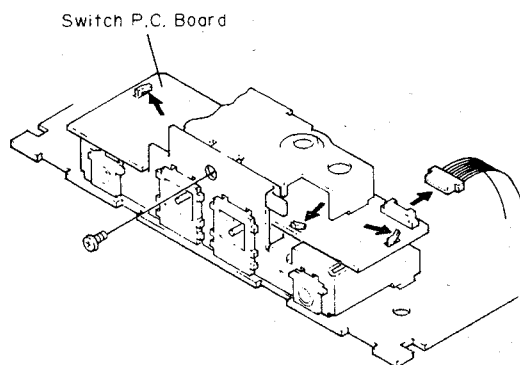


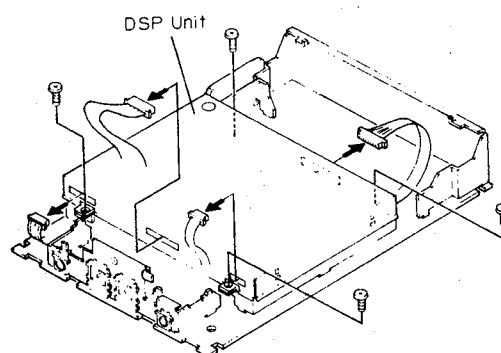
Fig.3

●Switch P.C.Board

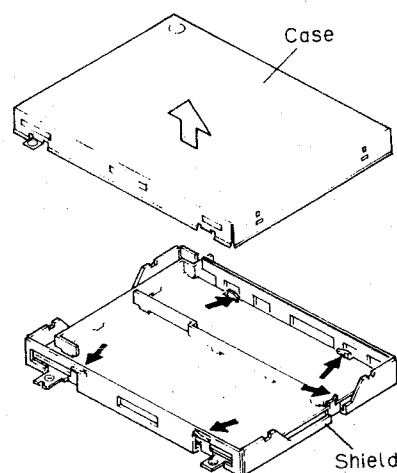
- 1.Remove the connector.
- 2.Remove the screw.
- 3.Unbend the claws at three locations until straight.
- 4.Remove the switch P.C.Board.

**Fig.4****●DSP Unit**

- 1.Remove the four connectors.
- 2.Remove the four screws.
- 3.Remove the DSP unit.

**Fig.5****●Shield**

- 1.Remove the case.
- 2.Unbend the claws at five locations until straight.
- 3.Remove the shield.

**Fig.6**

3. CIRCUIT DESCRIPTION

●System Initialization

The process for system initialization is as follows:

1. VDD 5 V is fed into the IC601 microcomputer.
2. BSENS and ASENSB pins are set L.
3. ROPW pin is set H and the ROMPOW 5 V is fed to the external ROM IC602.
4. The communication between the IC601 microcomputer and the external ROM IC602 begins.
5. Unless any error occurs in the communication between the microcomputer and the external ROM, IPPW pin is set H.
6. IP 5 V is fed into the IP-BUS circuit.
7. SYSPW is set H and the system is initialized.

●Memory Protection Circuit

When BACK UP is removed, Q954 is turned OFF and BSENS pin is set H. This makes the IC601 microcomputer find that BACK UP is removed. Then, oscillation of the microcomputer is stopped and the microcomputer enters the stop mode.

During the stop mode, current consumption is decreased.

In this state, the memory is protected by keeping VDD by means of C951. This memory protection circuit protects the memory contents for 3 or 4 days in the case where the car is inspected or the battery is replaced.

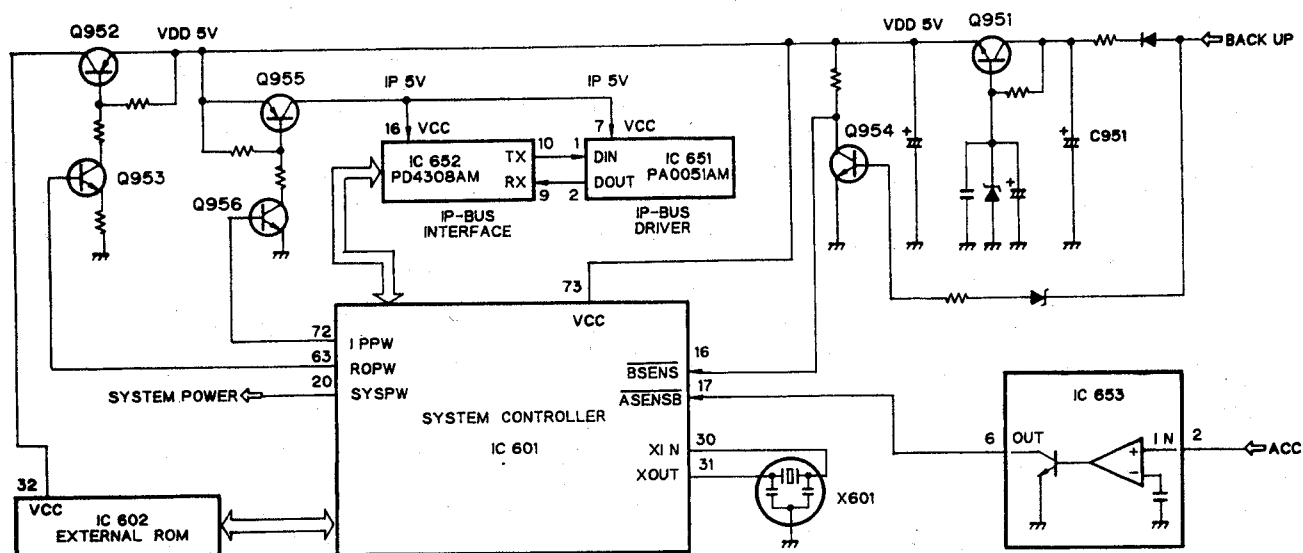


Fig.7

●Jitterless PLL

In generally used analog systems, it is impossible to prevent noise completely because a large amount of noise is generated from the vehicle. Therefore, an optical digital transmission system is adopted. This system is able to shut off electrical noise and does not have analog circuits that would be the cause of degradation of sound quality.

However, the optical fiber cable is not resistant to bending and the like, and thus jitters (irregular movement of clock pulses) are produced when the cable is installed in the interior of the vehicle. Because the jitter results in degradation of the sound quality, a jitterless PLL circuit that prevents jitters is needed.

The jitterless PLL circuit consists of the waveform shaping circuit (WF) and two systems of PLL circuits (see the figure).

- ① The data input from the receptacle involves slight jitters and irregular waveforms as a result of the way of installing the optical cable.
- ② The irregularity included in the input data is rectified by making the input signals pass through the waveform shaping circuit.
- ③ The waveform shaped data is input into DIR (IC601) and combined with one-sixth (64 fs) of the internal VCO (384 fs) to form PLL1. As a result, the internal

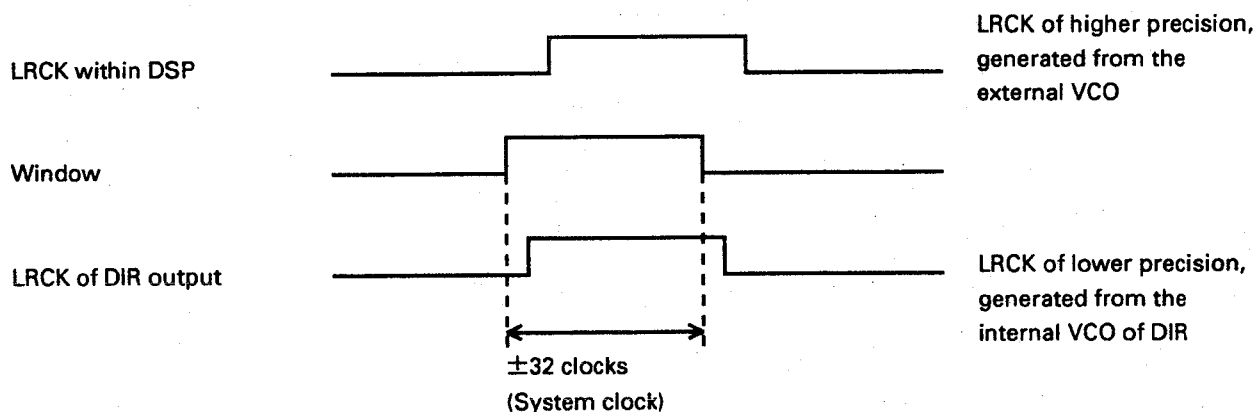
VCO is PLL-locked to the input signal by 384 times as large as the input data ($f_s = 44,1 \text{ kHz}$).

Then, the output (384 fs) of the internal VCO is input into the DIR section to generate LRCK (fs) and BCK (64fs).

Should this internal VCO output be used as MCK (master clock) for DAC, the stability (precision) would be insufficient. Thus, the output is further combined with another external VCO (an oscillating device having the stability (precision) equivalent to a crystal oscillator) in order to form a loop of PLL2. The objective of the PLL2 is to get the master clock of higher precision as input into the DAC, so that the DAC can operate, giving its full capability.

- ④ A loop of PLL2 is formed by comparing the BCK (64 fs) generated from the internal VCO (384 fs) with one-sixth of the external VCO. Sound quality is enhanced by using the output of PLL2 as master clock for DAC and DSP.
- ⑤ Since the LRCK and BCK which are outputs of DIR are generated from the internal VCO of DIR by means of dividing, use of them as they are brings on inadequate performance. In order to prevent this obstruction, the IC of DSP has a built-in feature called "jitter-free".

<Jitter-free feature>



If there are some jitters in external (input) LRCK, pulses can be output at the timing of LRCK of higher precision within DSP as long as they are inside the Window, and thus jitters will vanish.

In DSP and subsequent sections, jitter-free LRCK having higher precision, generated from the external VCO, is used.

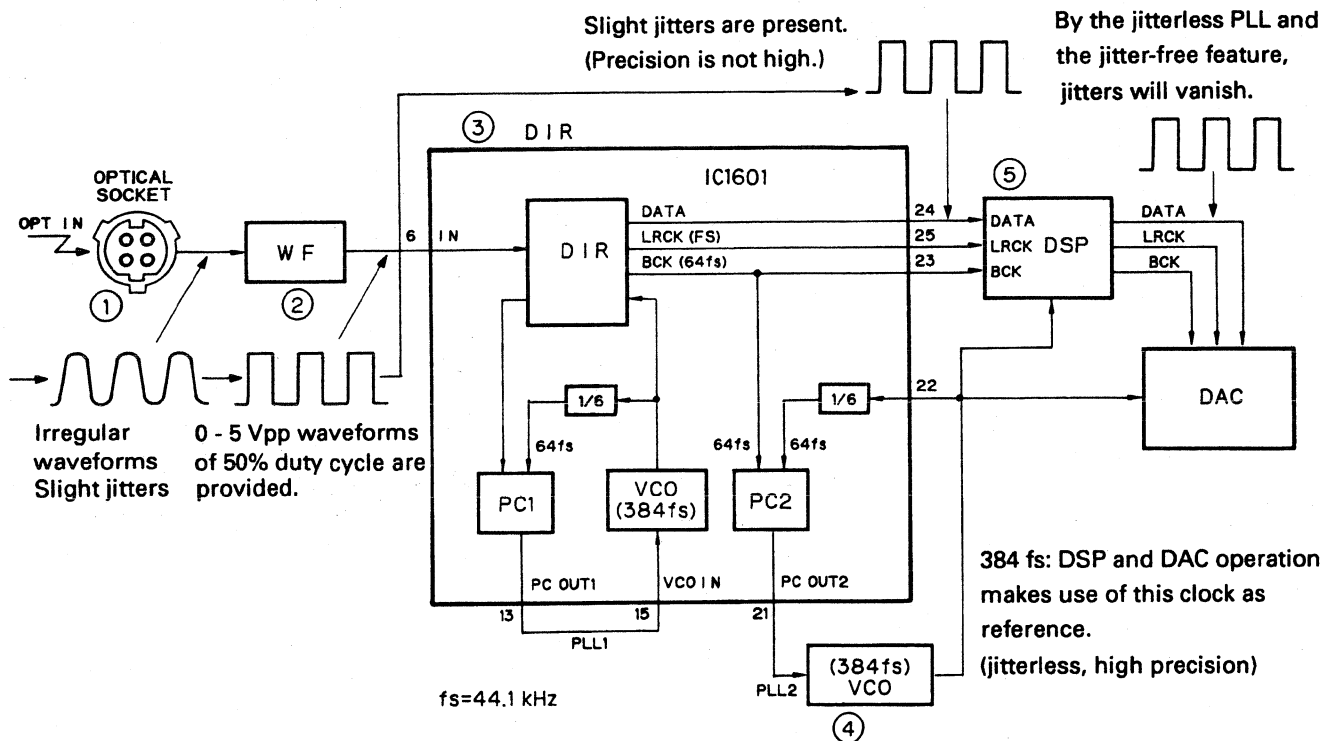


Fig.8

●DSP System Diagram

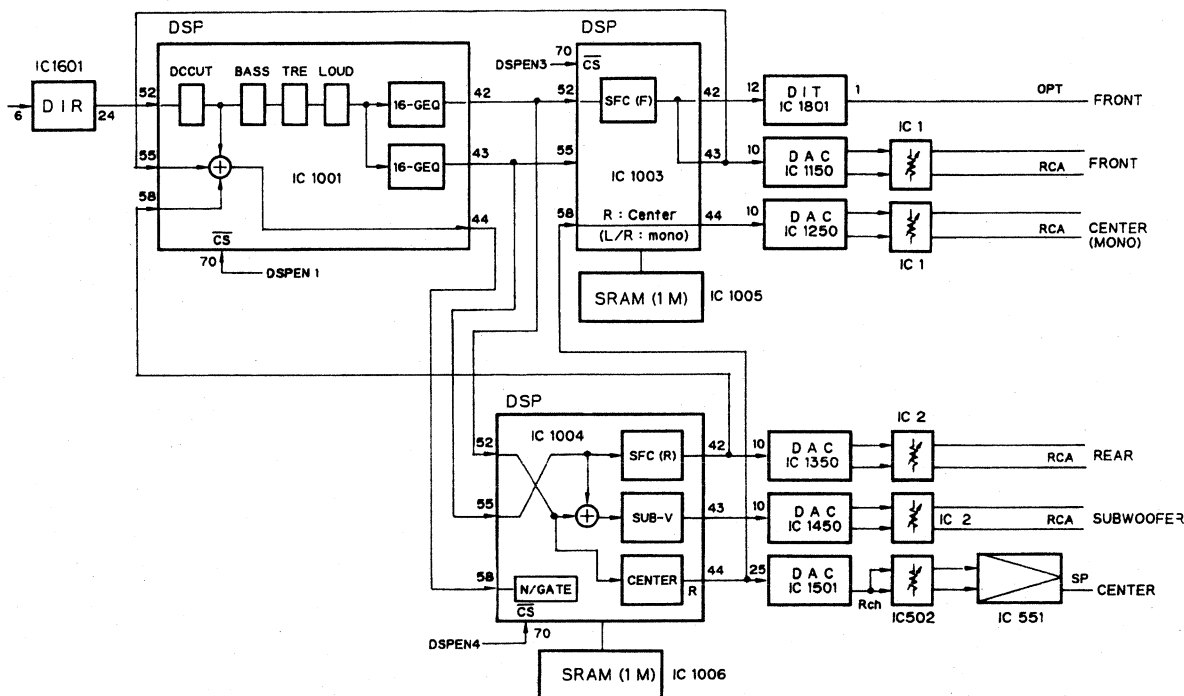


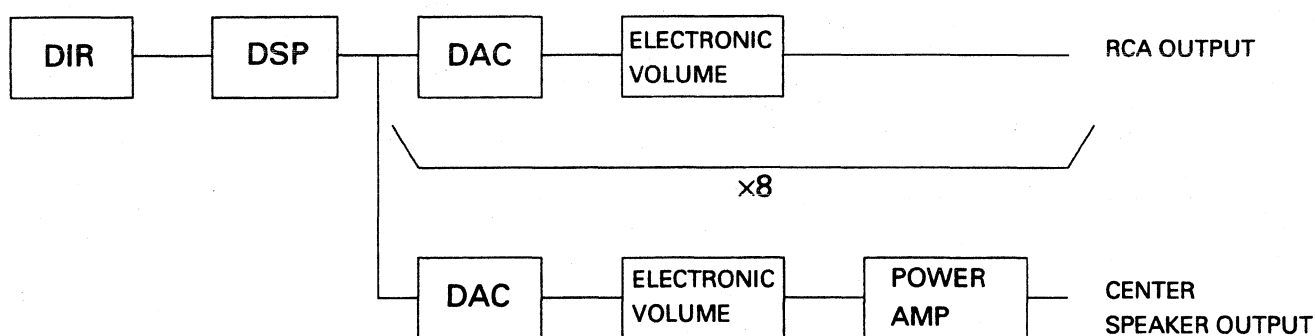
Fig.9

●Analog Output Circuit

RS-P50 contains 9-channel DAC (8 channels for RCA output and one channel center SP) and an electronic variable resistor in order to make connection to the existing analog amp.

In DSP, as shown in the figure, digital data input from

DIR undergoes signal processing such as NAC (Natural Acoustic Control), 16-band GEQ, etc. The processed digital data is input into DAC and converted into analog signals. Then, the signals can be controlled by the electronic variable resistor. 1-bit DAC that is subject to less zero-cross distortion is used.



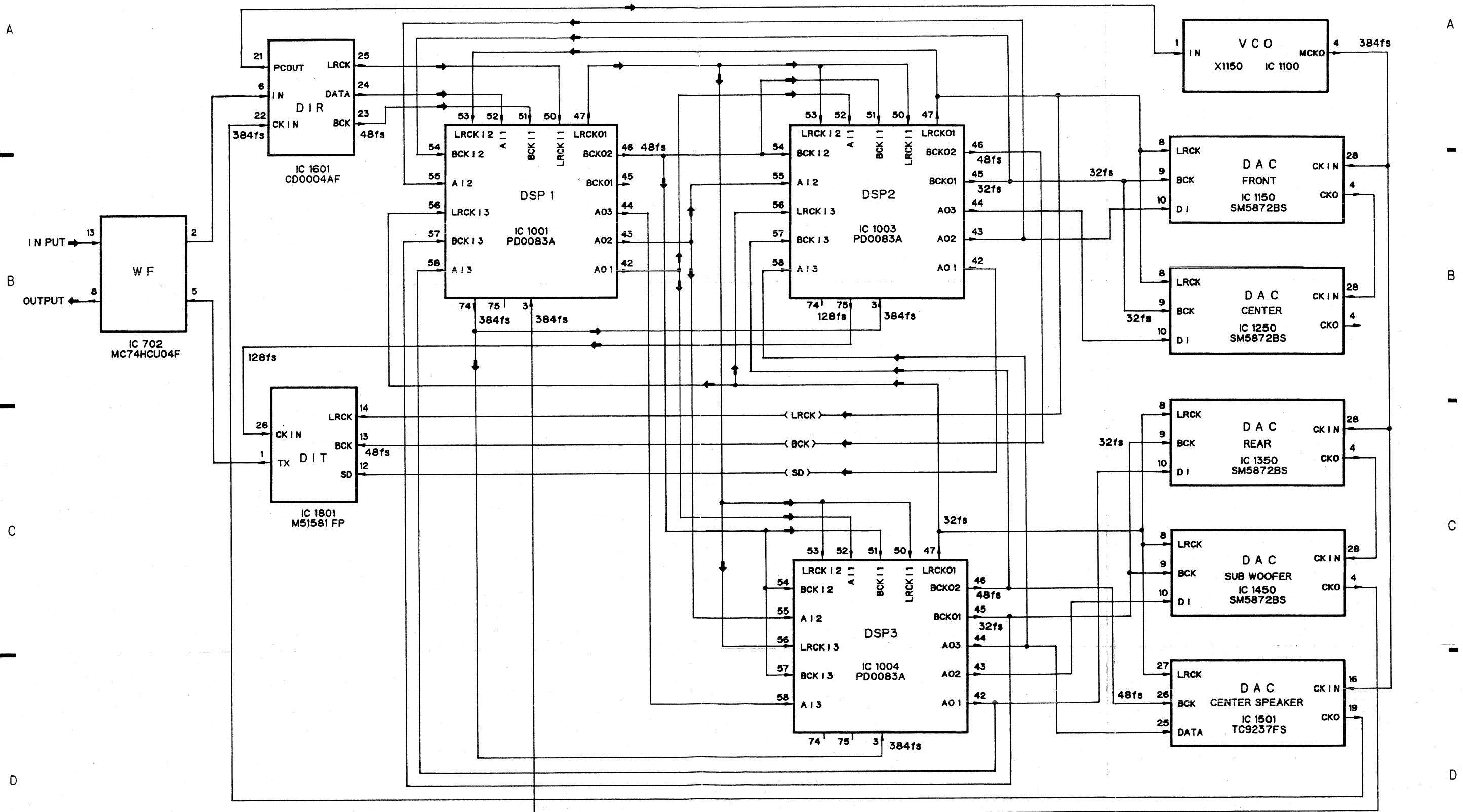
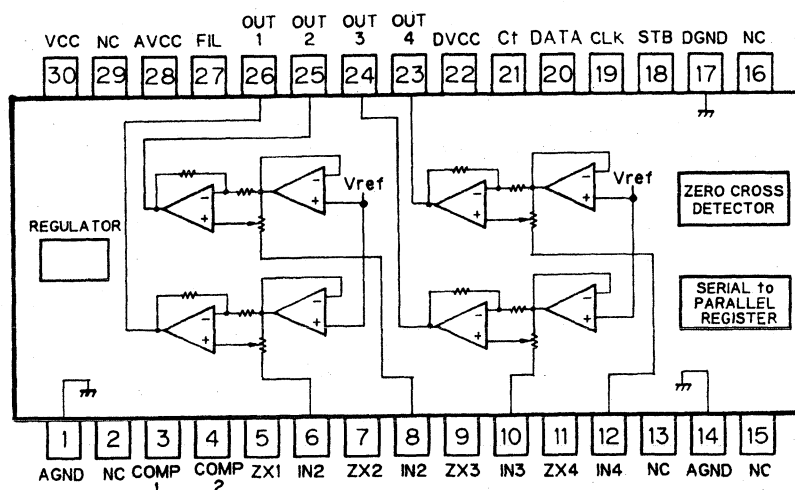


Fig.10

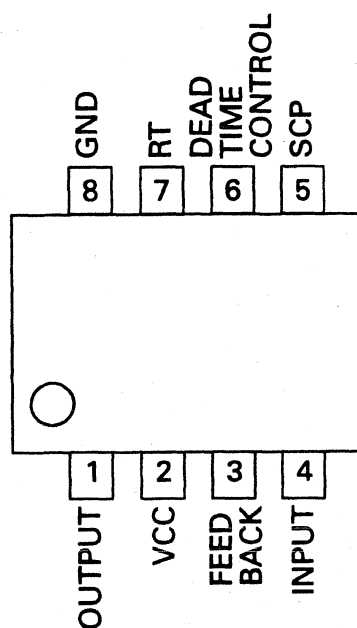
●ICs

●Audio Control Unit

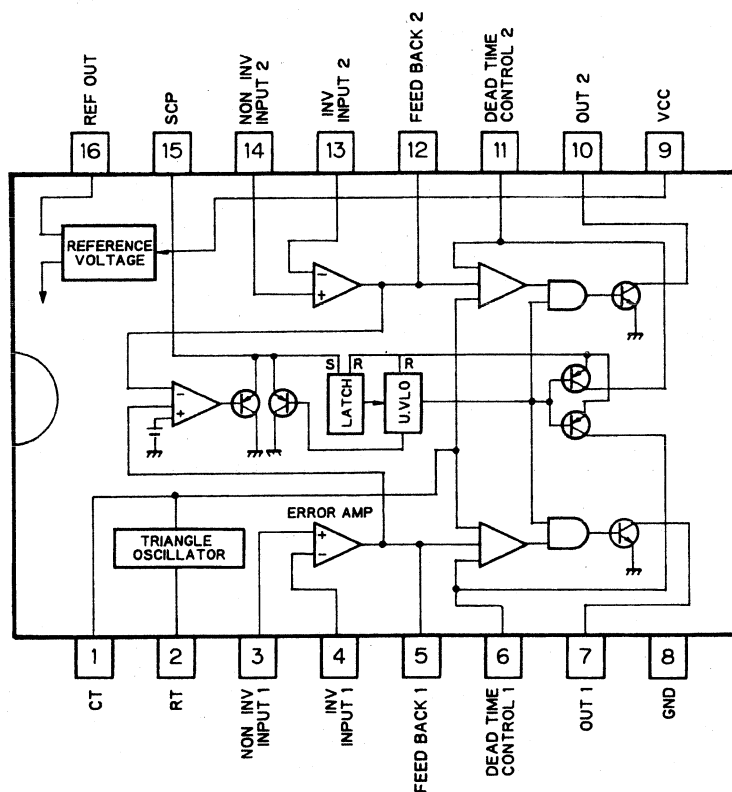
IC1,2,502:PMJ003A



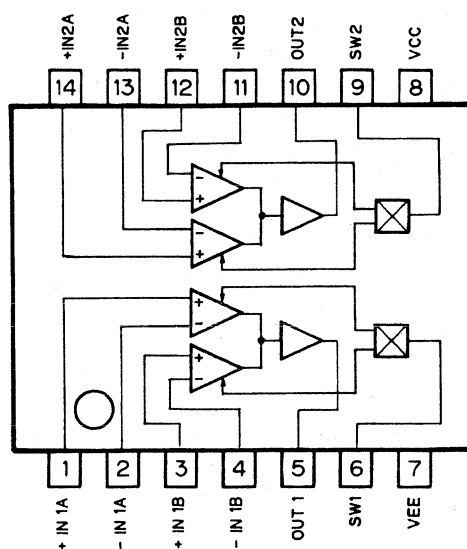
IC50:TL5001PS



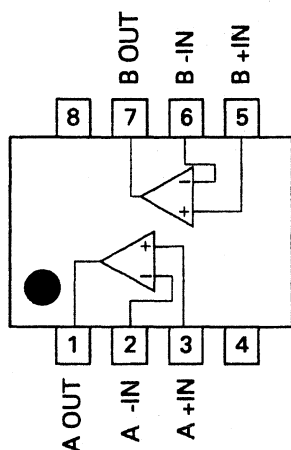
IC66:TL1451ANS



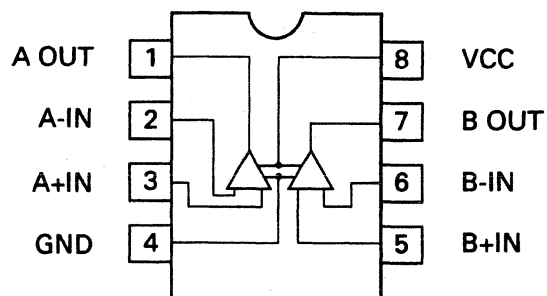
IC103,303:BA3129F



IC104,203,304,403:NJM2082M
 DSP Unit
 IC1101,1201,1301,1401:NJM2082M

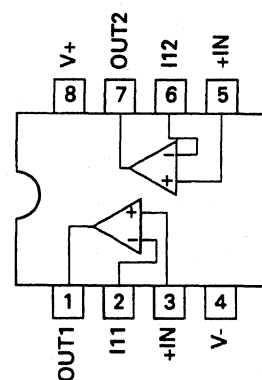
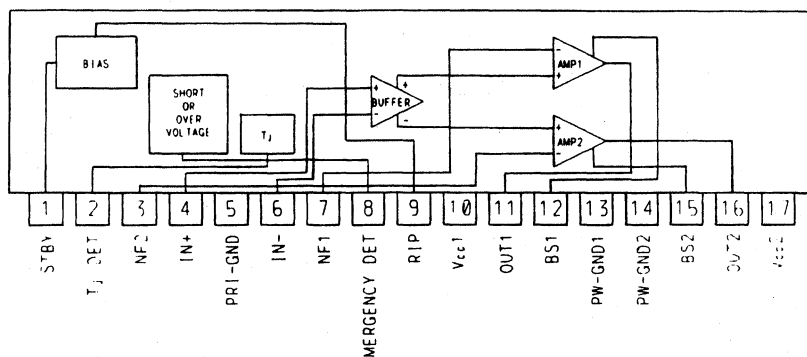


IC151,251,351,451:NJM5532MD
 DSP Unit
 IC1102,1202,1302,1402:NJM5532MD

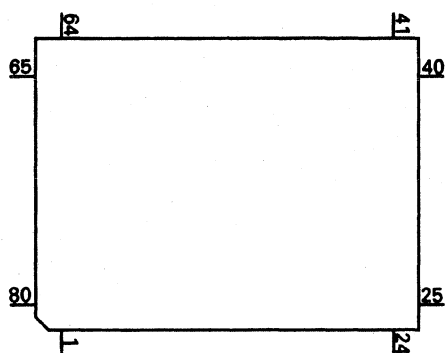


IC501:UPC4570G

IC551:TA8225L



*IC601:PD5212A



IC's marked by* are MOS type.

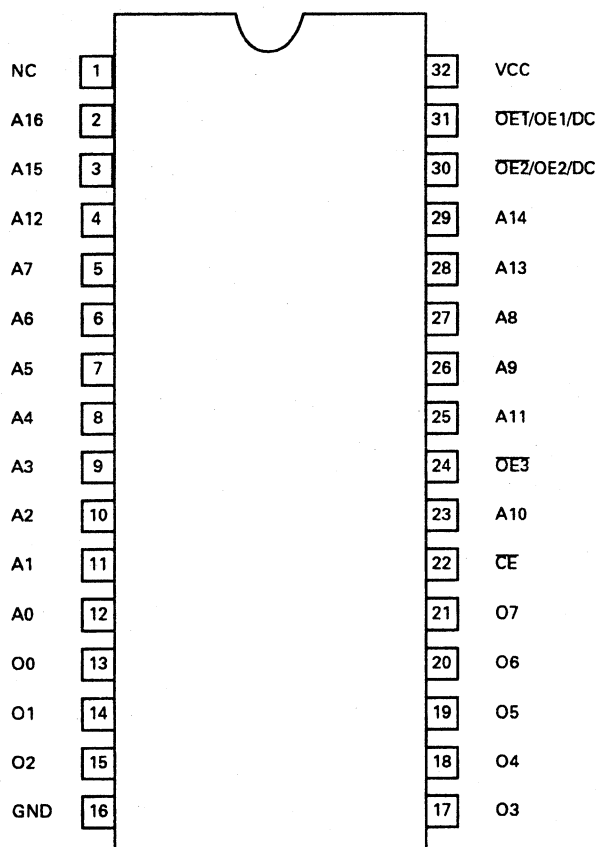
Be careful in handing them because they are very liable to be damaged by electrostatic induction.

●Pin Functions(PD5212A)

Pin	Pin Name	I/O	Output Format	Function
1	DSPEN3	O	C	DSP enable
2	NC			Not used
3	DSPEN1	O	C	DSP enable
4	DIRERR	I	C	DIR error detector
5	DIRDA	I	C	Audio/Digital switch
6	DIRFS	I	C	Frequency select terminal bit
7	TESTIN	I		Test program mode input
8	DSPRDY	I	C	Microcomputer I/F reception enable input
9	IPSCR	O	N	IP-BUS serial clock
10	IPOUT	O	N	IP-BUS serial data output
11	IPIN	I	C	IP-BUS serial data input
12	DSPRST	O	C	DSP reset control
13	DSPAD	O	C	DSP data/address switch
14	XA16	O	C	External ROM address output
15	MUTE	O	C	System mute
16	BSENS	I		Back up power sense input
17	ASENSB	I	C	Acc sense input
18	ENBL	I		Test program enable input
19	HPFP	O	C	High pass filter for switch ON/OFF
20	SYSPW	O	C	System power supply control output
21	DSPCK	O	C	DSP serial clock output
22	DSPOUT	O	C	DSP serial data output
23	DSPIN	I	C	DSP serial data input
24	XA15	O	C	External ROM address output
25	IPIRQ	I		Interrupt input from IP BUS interface IC
26	CNVSS	I		GND
27	RST	I		Reset signal input terminal
28	SWST	O	C	Switch strobe
29	VCK3	O	C	Clock output of electronic volume 3
30	XIN	I		Crystal oscillating element connection pin
31	XOUT	O		Crystal oscillating element connection pin
32	VSS			GND
33-40	XDT7-0	I	C	External ROM data input
41	XCE	O	C	Chip enable output for external IC
42-56	XA14-0	O	C	External ROM address output
57	XRD	O	C	External ROM read signal output
58-61	NC			Not used
62	ONW	I	C	Read cycle extension signal input
63	XPW	O	C	External ROM power
64	VCK2	O	C	Clock output electronic volume 2
65	VCK1	O	C	Clock output for electronic volume
66	VST	O	C	Strobe pulse output for electronic volume
67	VDT	O	C	Data output for electronic volume
68	IPCD	O	C	Command/data output for IP BUS interface IC
69	IPRW	O	C	Read / write output for IP BUS interface IC
70	IPCS	O	C	Chip select output for IP BUS interface IC
71	IPRST	O	C	Reset output for IP BUS interface IC
72	IPPW	O	C	Power supply control output for IP BUS interface IC
73	VCC			5V
74	VREF	O	C	0V
75	AVSS			GND
76-79	SWDT3-0	I	C	Switch data input
80	DSPEN4	O	C	DSP enable

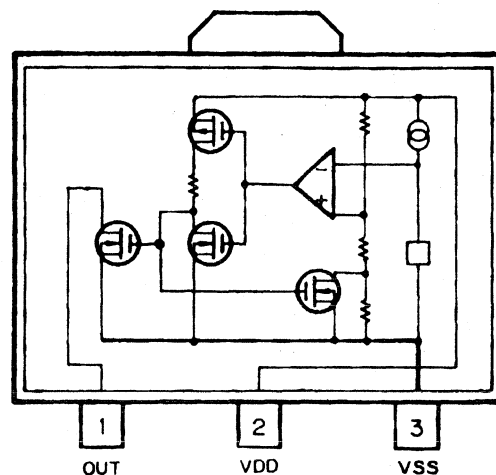
Output Format	Meaning
C	CMOS
N	N channel open drain

*IC602:PD4452A

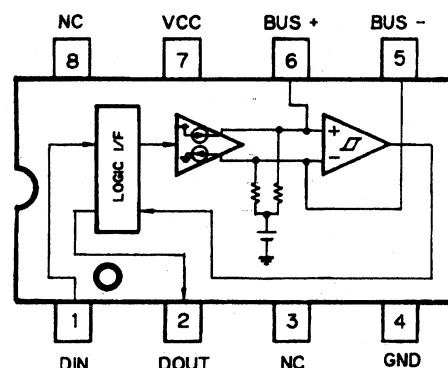


A0-A16 : Address
 CE : Chip enable
 OE1-OE3 : Output enable
 O0-O7 : Output
 DC : Don't care
 NC : No connection

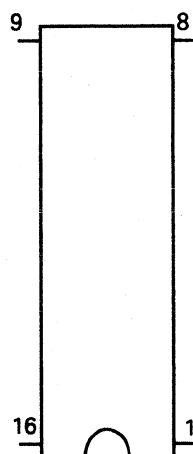
*IC603:S-80735AN-DZ



IC651:PA0051AM



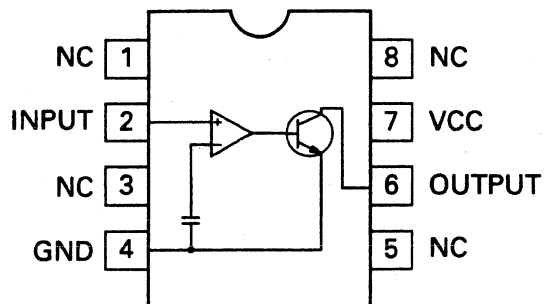
IC652:PD4308AM



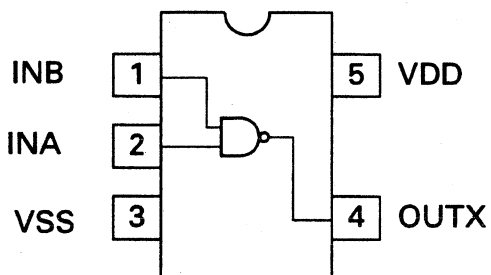
● Pin Functions(PD4308AM)

Pin	Pin Name	I/O	Function and Operation
1	IPSCK	I/O	Clock input/output
2	IPSI	I	Data input
3	IPSO	O	Data output
4	IPIRQ	I	Interrupt input
5	IPRW	O	Read / write output
6	X1		Crystal oscillator connection pin
7	X0		Crystal oscillator connection pin
8	GND		GND
9	RX	I	Data input
10	TX	O	Data output
11	NC		Not used
12	IPCD	O	Command/data output
13	IPCS	O	Chip select output
14	IPRST	O	Reset output
15,16	VDD		Power supply

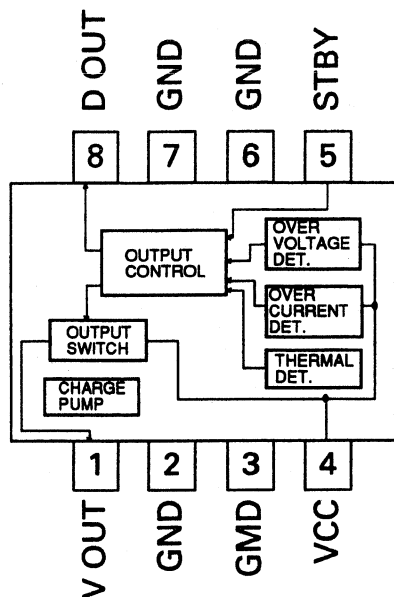
IC653:M51946BFP



*IC654:TC7S00F

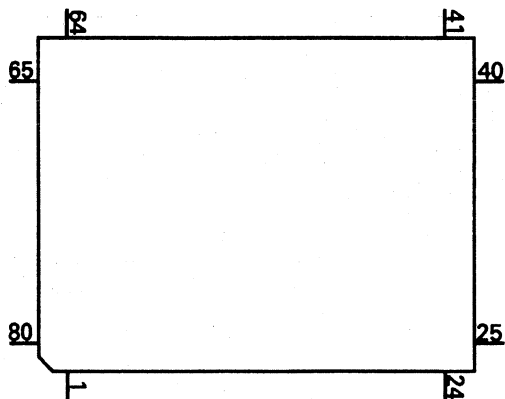


IC951:PML001A



● DSP Unit

*IC1001,1003,1004:PD0083A

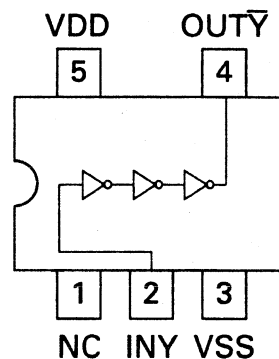
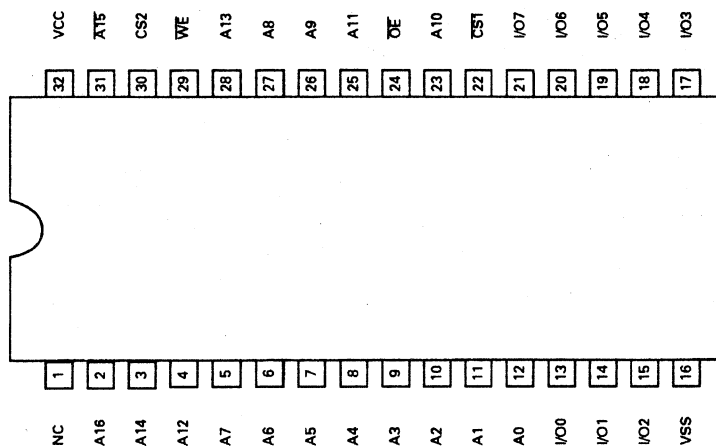


●Pin Functions(PD0083A)

Pin	Pin Name	I/O	Function
1	XIN	I	Crystal oscillating element connection pin
2	XOUT	O	Crystal oscillating element connection pin
3	EXCK	I	External clock input
4	VDD1		Power supply
5	WE0	O	Write enable pin of external RAM
6	OE0	O	Output enable pin of external RAM
7	WE1	O	Write enable pin of external RAM
8	OE1	O	Output enable pin of external RAM
9	CE	O	Chip enable pin of external RAM
10	CE	O	Chip enable pin of external RAM
11-18	RAMIO0-7	I/O	Data input output pin of external RAM
19	VSS1		GND
20-25	A16-11	O	Address output pin of external RAM
26	VDD2		Power supply
27-37	A10-0	O	Address output pin external RAM
38-41	TP1-4	I	Test mode input pin
42-44	AOUT1-3	O	Lch,Rch audio serial data output pin
45	BCKOUT1	O	Bit clock of 32fs output pin
46	BCKOUT2	O	Bit clock of 48fs output pin
47	LRCKOUT1	O	LR clock output pin
48	LRCKOUT2	O	LR clock output pin
49	VSS2		GND
50	LRCKIN1	I	LR clock input pin1
51	BCKIN1	I	Bit clock input pin1
52	AIN1	I	Lch,Rch audio serial data input pin1
53	LRCKIN2	I	LR clock input pin2
54	BCKIN2	I	Bit clock input pin
55	AIN2	I	Lch,Rch audio serial data input pin2
56	LRCKIN3	I	LR clock input pin3
57	BCKIN3	I	Bit clock input pin3
58	AIN3	I	Lch,Rch audio serial data input pin3
59	VSS3		GND
60-64	TEST00-4	O	Test output pin
65	DRDY	O	Microcomputer I/F reception enable output pin
66	TDATA	O	Microcomputer I/F transmission data output pin
67	RDATA	I	Microcomputer I/F reception data input pin
68	SCK	I	Clock input terminal serial data input
69	A/D	I	Address data discrimination input pin
70	CS	I	External RAM chip select
71	RESET	I	Reset input
72	XSEL	I	Frequency/external switch pin
73	VDD3		Power supply
74	384FS	O	Master clock output pin
75	128FS	O	128fs clock output pin for A/D converter
76	64FS	O	64fs clock output pin for A/D converter
77	32FS	O	32fs clock output pin for A/D converter
78	2FS	O	2fs clock output pin for A/D converter
79	FS	O	Fs clock output pin A/D converter
80	VSS4		GND

IC1005,1006:GGC1028(HM628128LFI-8)

*IC1100:SC7S04F

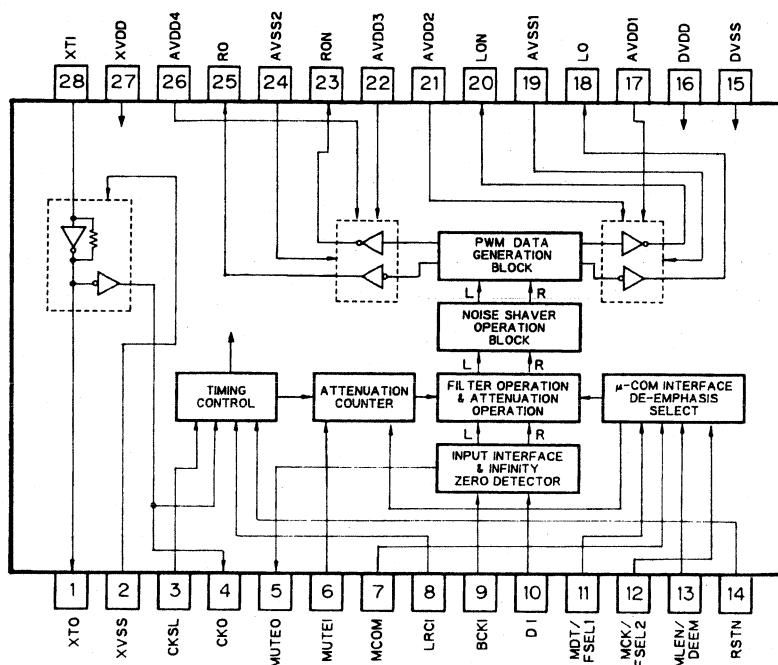


●Functions(GGC1028)

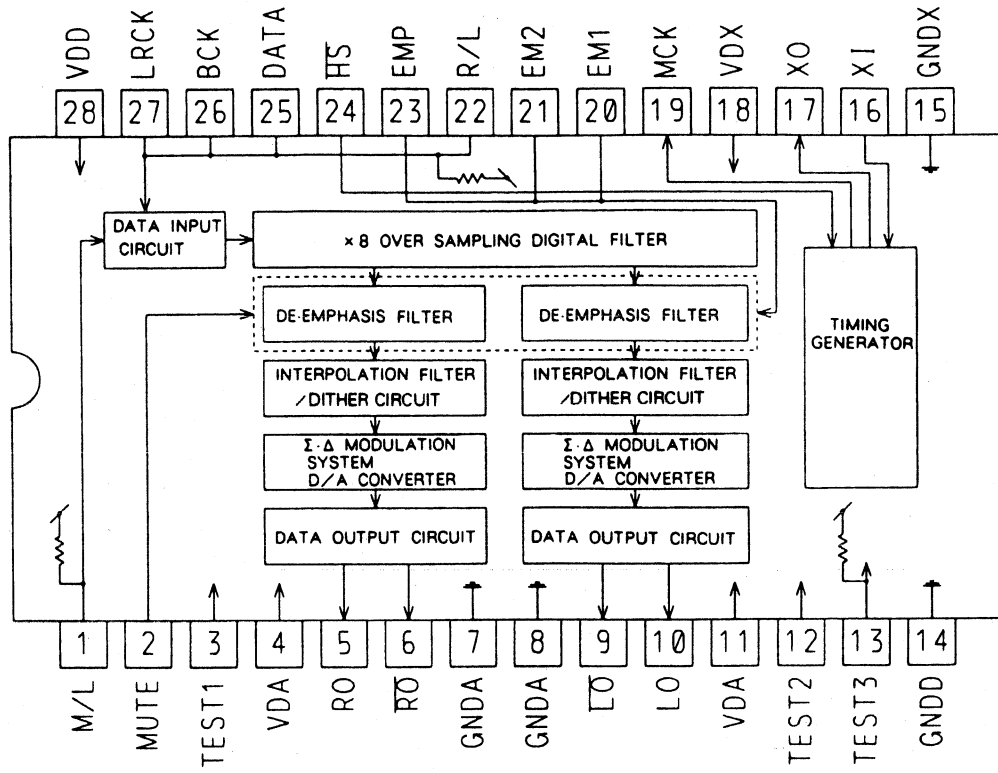
CS1	CS2	OE	WE	Mode	I/O	Note
H	*	*	*	Not select	High-z	
*	L	*	*	Not select	High-z	
L	H	H	H	Read	High-z	Output disable
L	H	L	H	Read	Dout	Read Cycle1-3
L	H	H	L	Write	Din	Write Cycle1
L	H	L	L	Write	Din	Write Cycle2

*:H or L

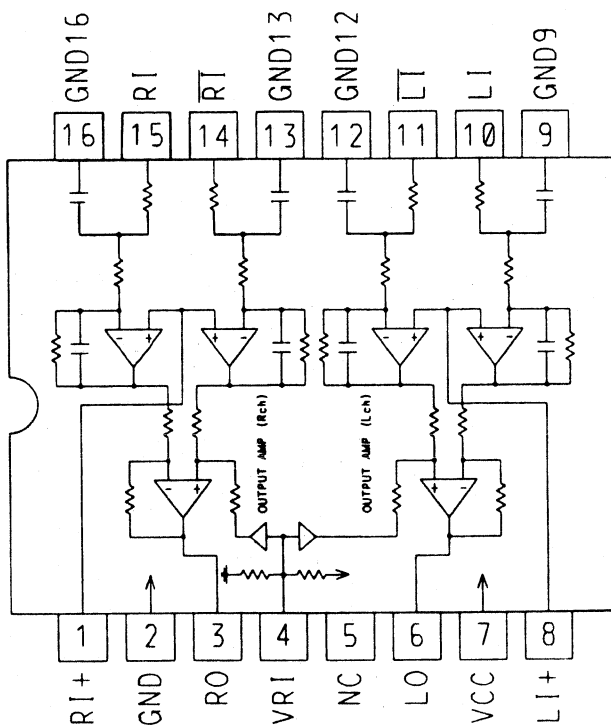
*IC1150,1250,1350,1450:SM5872BS



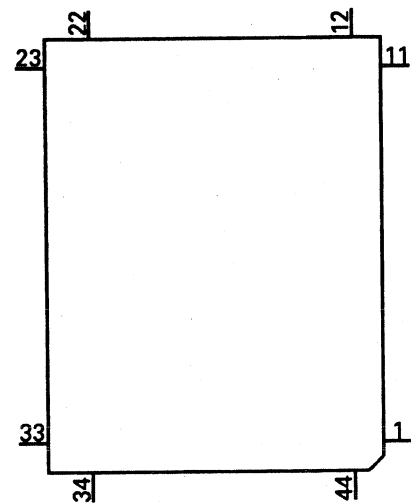
IC1501:TC9237F



IC1502:TA2009F



*IC1601:CD0004AF

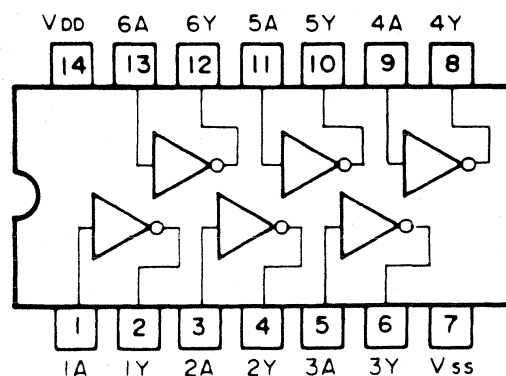
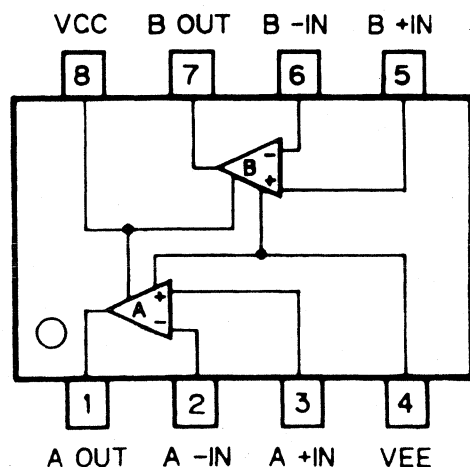


● Pin Functions(CD0004AF)

Pin No.	Pin Name	I/O	Function and Operation
1	RESET	I	Power ON/RESET input. Reset with "L"
2	16/24	I	Input format selecting terminal. provided with a pull-up resistor
3	A/M	I	Input format selecting terminal. provided with a pull-up resistor
4,5	S1-2	I	Input selecting terminal
6-9	IN1-4	I	Data input terminal
10,11	TEST1-2	I	Terminal for testing. Normally "H" or open. Provided with a pull-up resistor
12	PCVS		Input for setting self-propelling frequency for VCO
13	PCOUT1		Phase comparator output 1
14	R		Connecting terminal for VCO adjusting resistor
15	VCOIN		Control voltage input for VCO
16	VDD1		Power terminal for VCO line
17	VCOOUT		VCO output (384 fs)
18	VSS1		Grand terminal for VCO line
19,20	CA,CB		Connecting terminal for VCO adjusting capacity
21	PCOUT2		Phase comparator output 2
22	SIGIN	I	Input terminal for external VCO
23	BCK	O	Demodulated data bit clock output (64 fs)
24	DATA	O	Demodulated audio data output
25	LRCK	O	Demodulated data LR clock output. L channel with "H"
26,27	OMODE0-1	O	Data output format selecting terminal
28	VSS		Grand terminal for logic lin
29	BLOCK	O	Block start output terminal
30	UBIT	O	User data output terminal
31	CBIT	O	Channel status output terminal
32	VBIT	O	Validity output terminal
33	VDD		Power terminal for logic line
34	\overline{CS}	I	Chip select input terminal. Selecting state with "L"
35	SDATA	O	Serial data output terminal
36	SCK	I	Serial clock input terminal
37	COPY	O	Copy prohibit information output terminal
38	A/D	O	Audio/digital data information output terminal
39	DAT	O	DAT information output terminal
40,41	FS0-1	O	Sampling frequency information output terminal
42	EMPH	O	Emphasis information output terminal
43	ERR	O	Data reading error output terminal. Error with "H"
44	VCOINH	I	Input terminal for stop of oscillation of internal VCO. Stop with "H"

IC1701:NJM3404AM

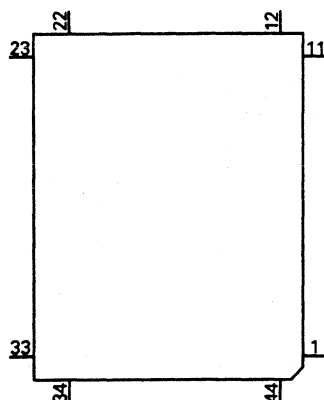
IC1702:MC74HCU04F



● Pin Functions(M51581FP)

Pin	Pin Name	I/O	Function
1	TX	O	Digital audio interface format output
2	RESET	I	Reset input
3	RX1	I	Digital audio data input 1
4	NFR	O	RX1 level converter output
5	RX2	I	Digital audio data input 2
6	RXSEL	I	RX select input
7,8	PD1,PD2	O	Phase comparative output for charge pump VCO
9	UNLOCK	O	Unlock detect output
10	RXCKI	I	VCO clock input
11	RXCKO	O	VCO clock output
12	SDI	I	Serial audio data input
13	BCK	I/O	Digital audio bit clock input/output
14	LRCK	I/O	Audio data word select input/output
15	SDO	O	Serial audio data output
16	ADSDI	I	A/D converter serial audio data input
17	VSS		GND
18	ADSEL	I	Serial data audio source select input
19	FLAGI	I	Error flag input
20	FLAGO	O	Error flag output
21	WCK	O	Word clock output
22	ASL	I	Audio data sampling length select input "H":24 bits "L":16 bits
23	IIS	I	Audio data format select input
24	MSBF	I	MSB select input
25	LRCKPOL	I	LRCK pole select input "H":Lch "L":Rch
26	MSTCK	I/O	Master clock input/output
27	CKSEL	I	Master clock frequency select input
28	REFCK	I	Reference clock input for sampling frequency accurate check
29	CKACO	O	Sampling frequency accurate check output
30	MUTE	I	Mute control input
31,32	MODE0-1	I	Mode select input
33	IN/out	I	Transmission reception select input
34,35	CAT0,1	I/O	Category information input/output
36	TXOE	I	TX output enable input
37	FSINSEL	I	fs information select input
38	VDD		Power supply
39	VSS		GND
40	TYPE	I/O	Type information input/output
41,42	FS0-FS1	I/O	fs information input/output
43	COPY	I/O	Copy information input/output
44	EMP	I/O	Emphasis information input/output

*IC1801:M51581FP



4. DC/DC CONVERTER CIRCUIT DIAGRAM

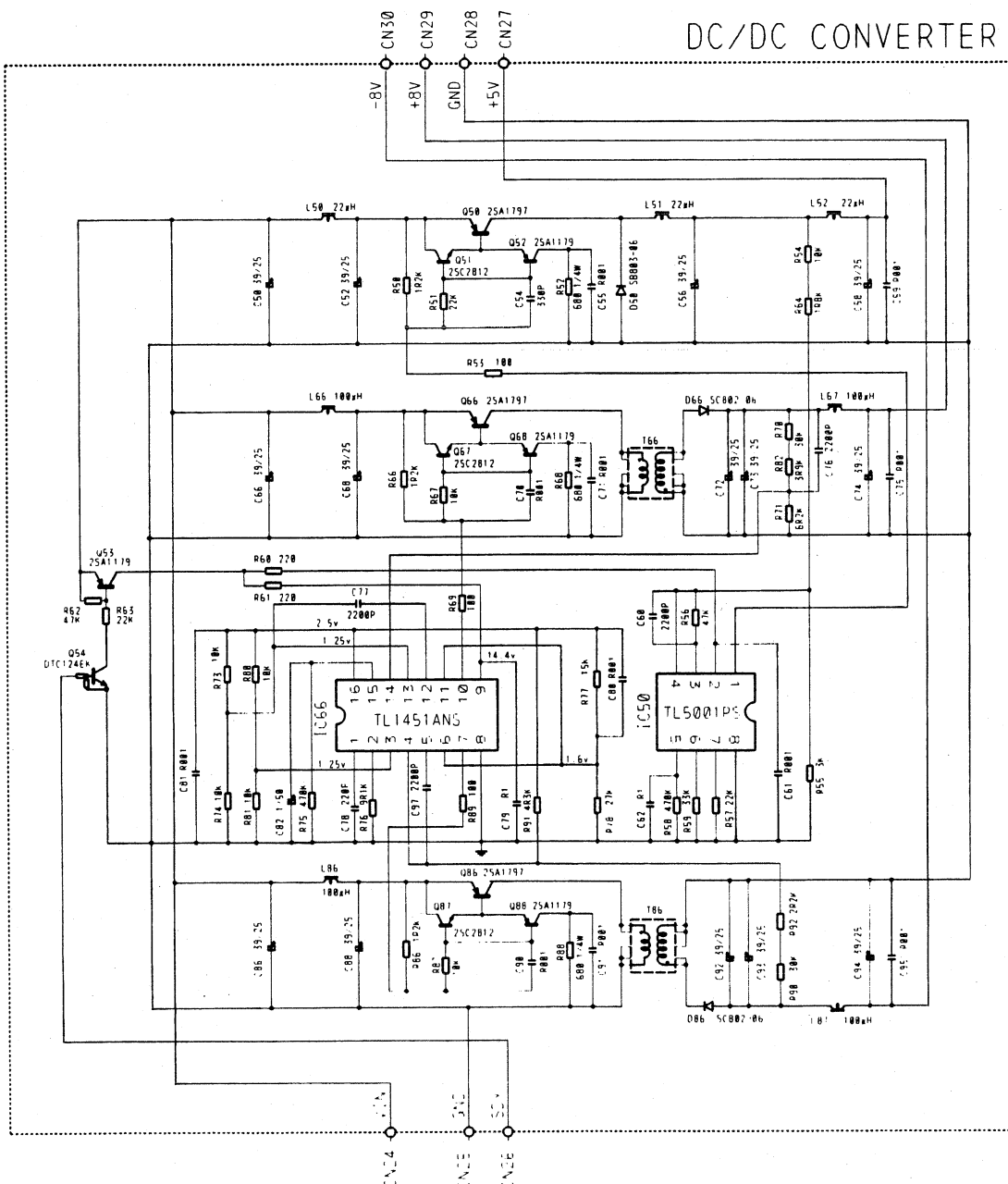
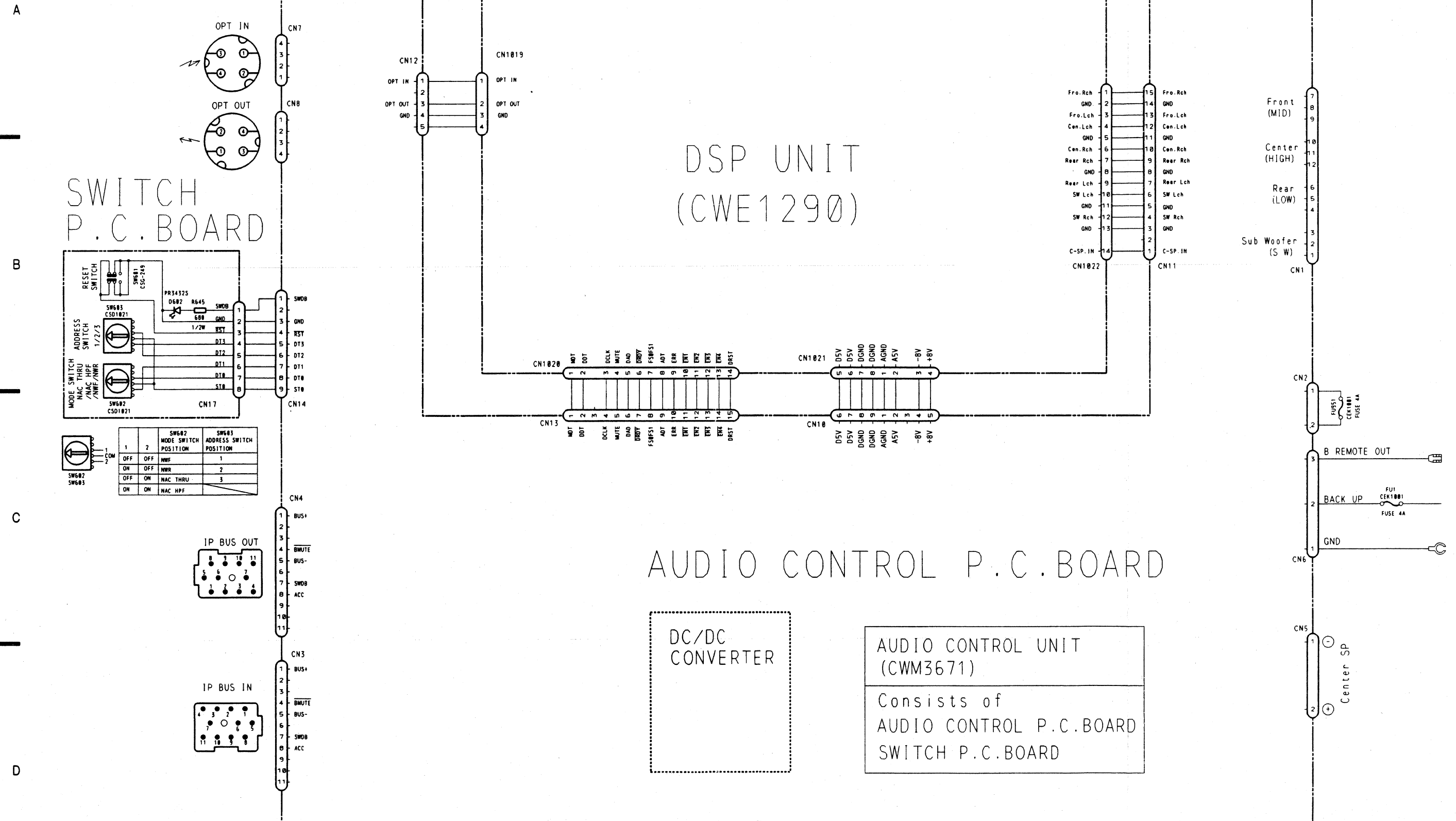


Fig.12

1 2 3 4 5 6



1 2 3 4 5 6

МАТЕМАТИЧЕСКОЕ ЭПИМЕНЕ



12

6. SWITCH P.C. BOARD

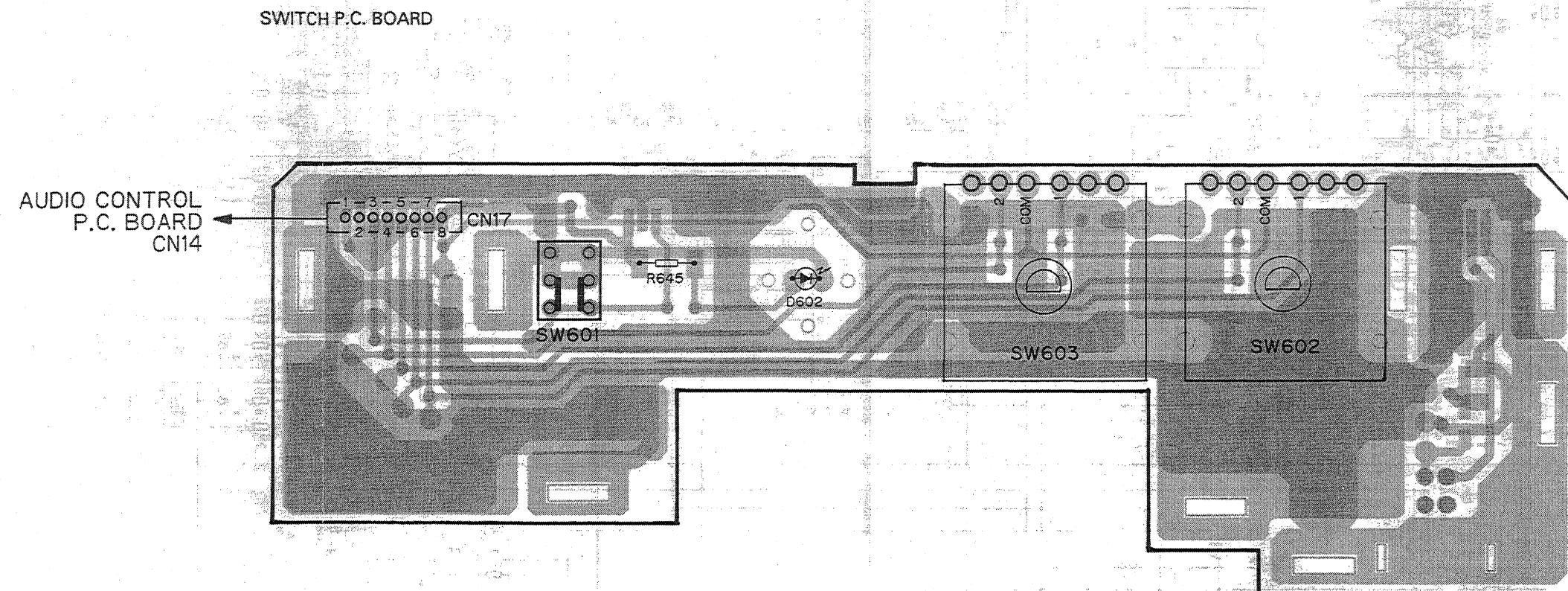


Fig. 14

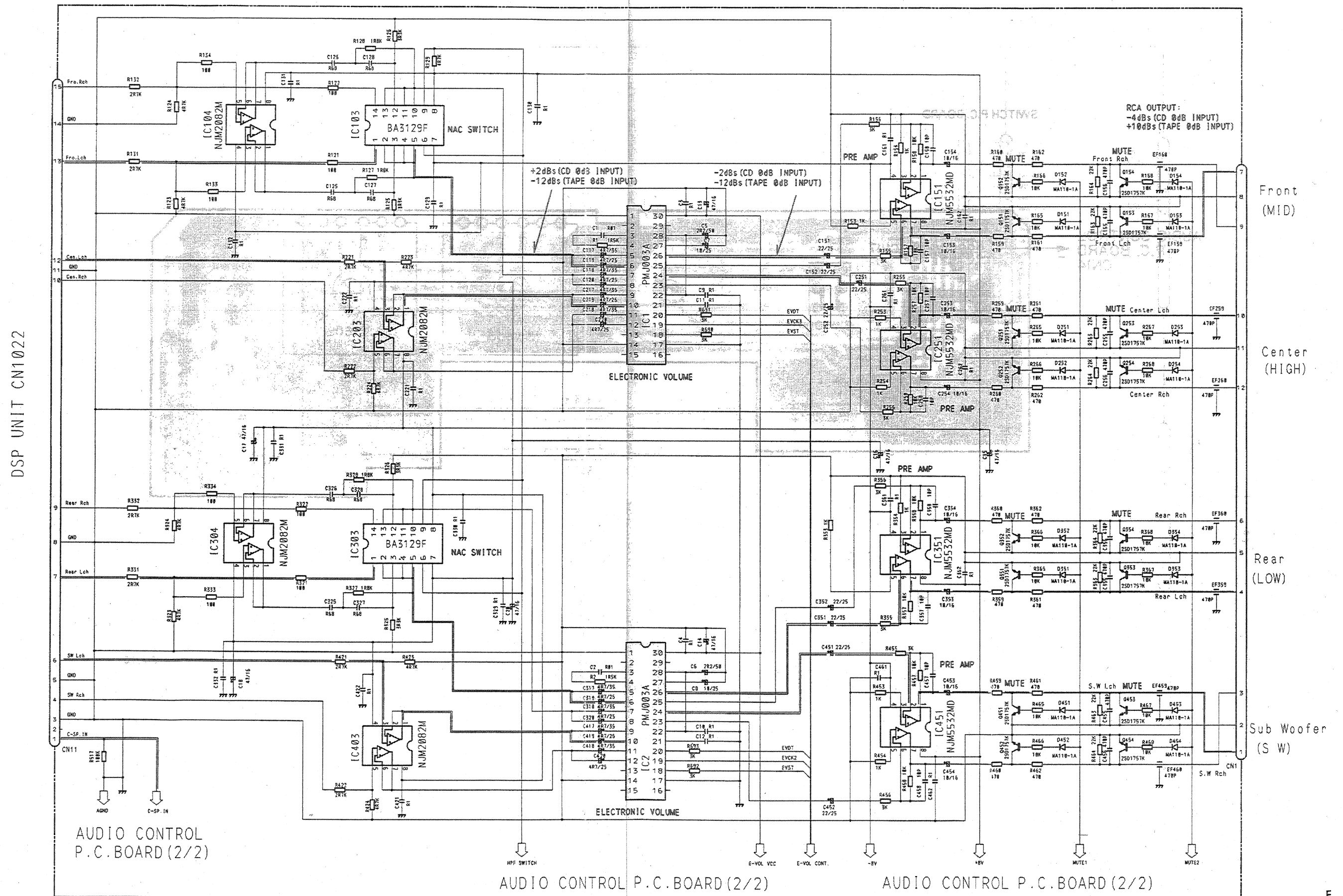
A A

B B

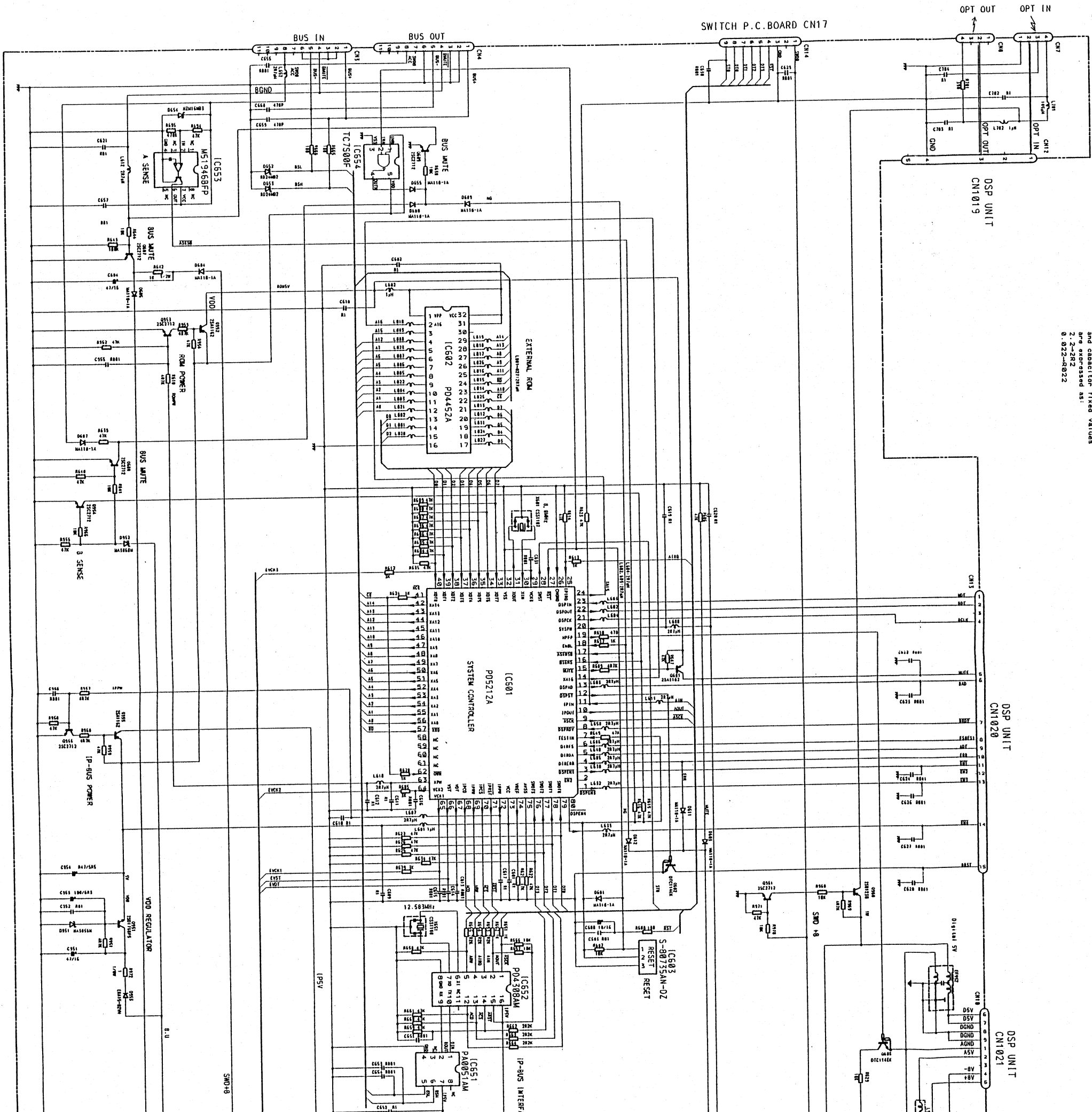
C C

D D

AUDIO CONTROL P.C. BOARD (1/2)



NOTE:
 Symbol indicates a resistor.
 No differentiation is made between chip resistors and discrete resistors.
 Symbol indicates a capacitor.
 No differentiation is made between chip capacitors and discrete capacitors.
 Decimal points for resistor and capacitor fixed values are expressed as:
 2.2-2K2
 0.022-0.022



DSP UNIT
CN1021

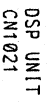
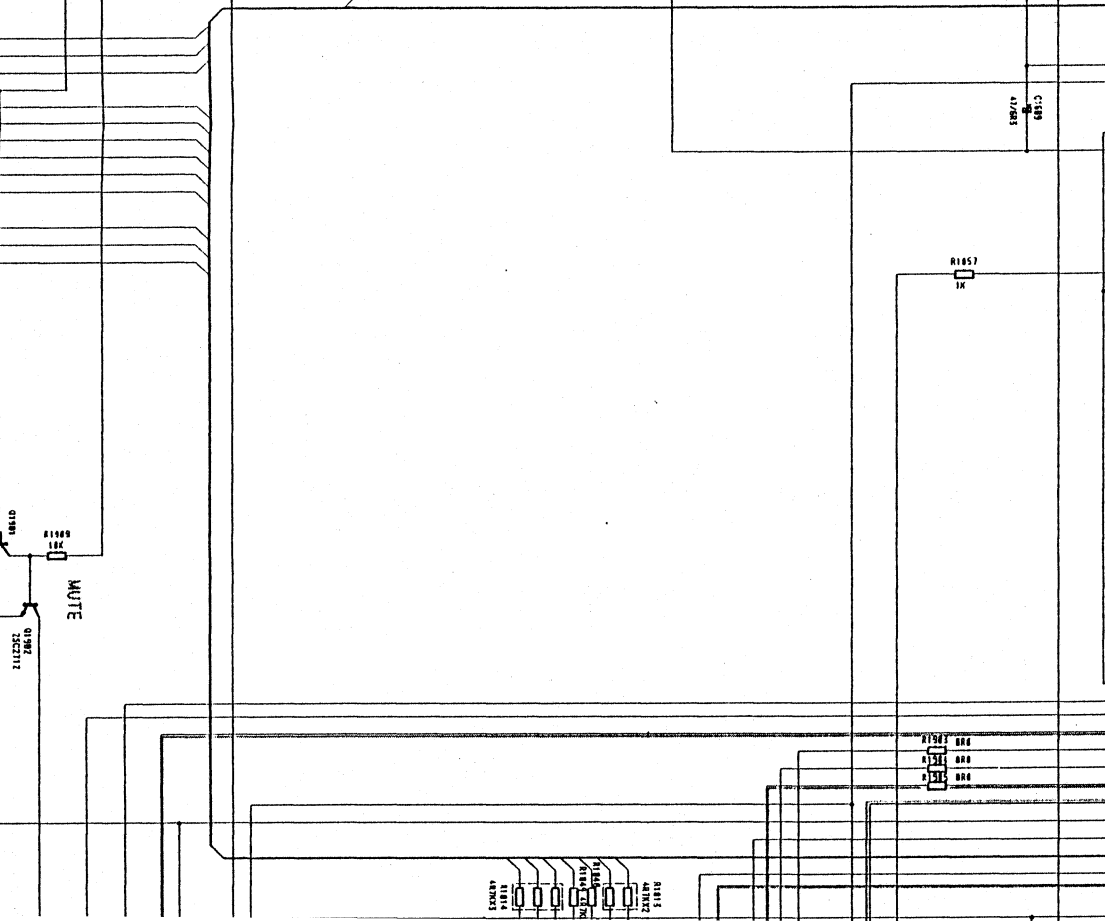
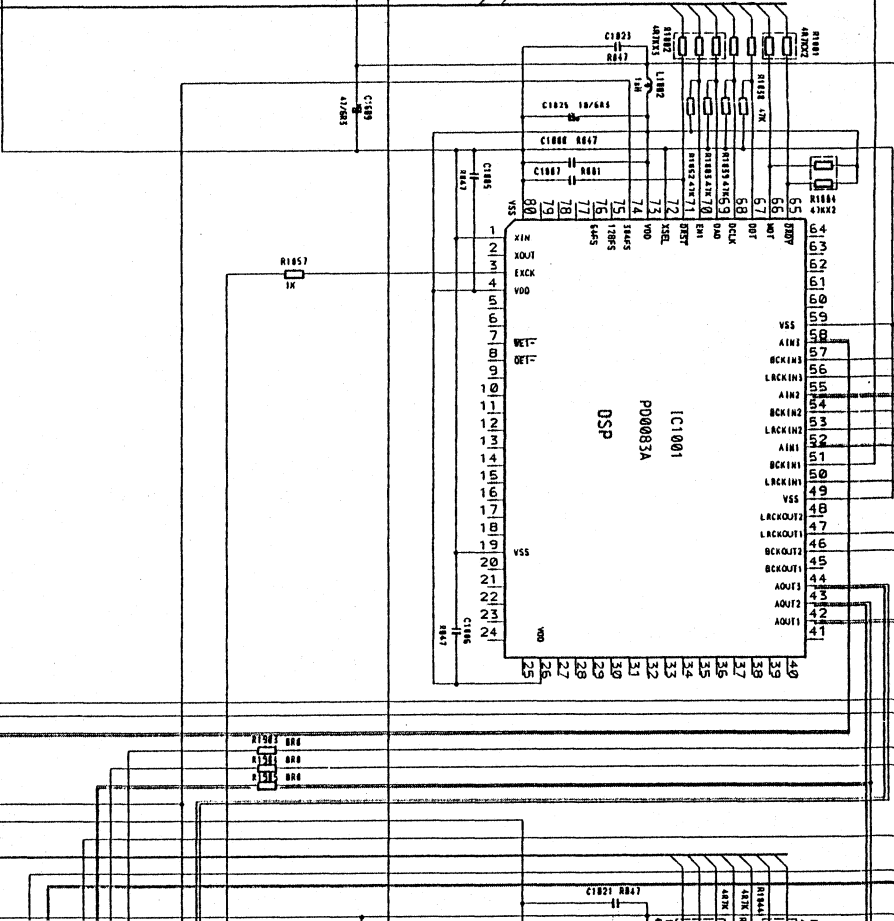
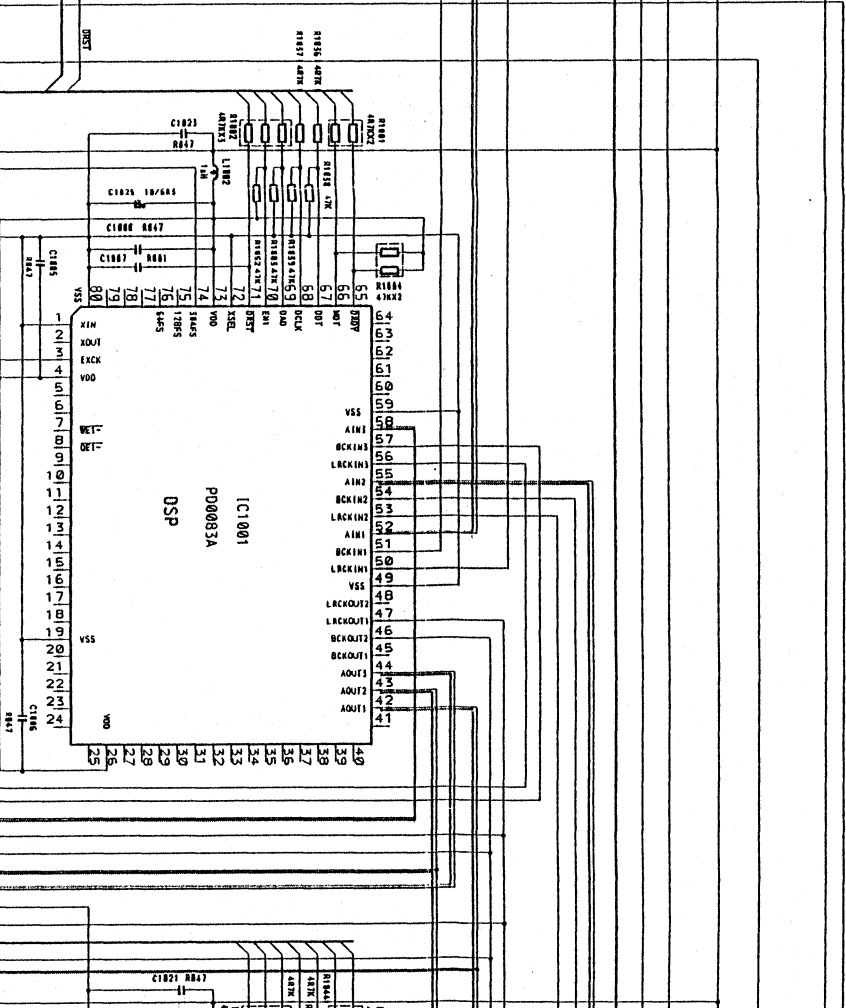
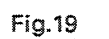


Fig.17

WAVE SHAPING CIRCUIT



CN13



9. EXPLODED VIEW

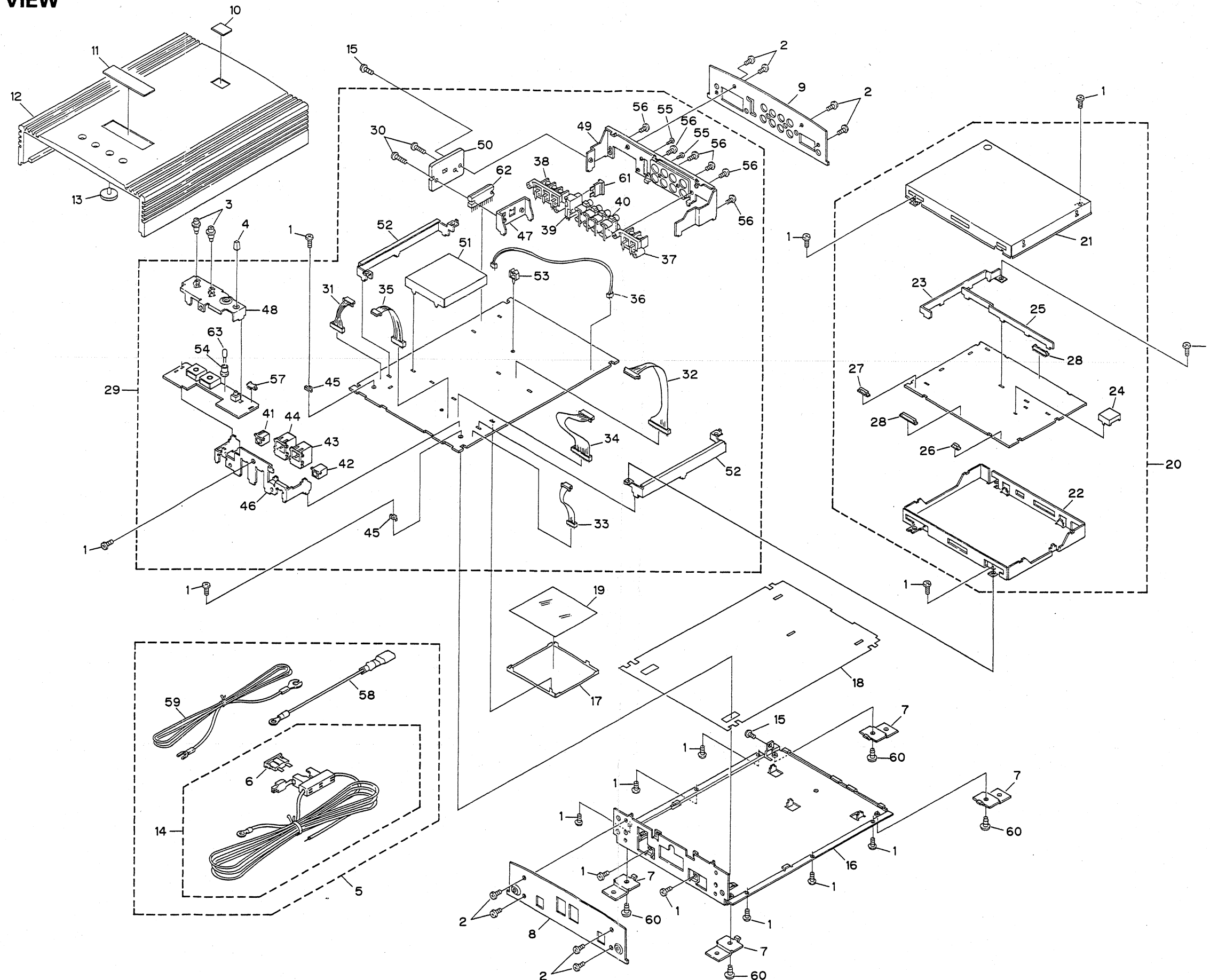


Fig.20

NOTES:

- Parts marked by "*" are generally unavailable because they are not in our Master Spare Parts List.
- Parts marked by "◎" are not always kept in stock. Their delivery time may be longer than usual or they may be unavailable.

● Parts List

Mark	No.	Description	Part No.	Mark	No.	Description	Part No.
	1	Screw	BMZ30P050FCU	34	Cord(CN13)	CDE3969	
	2	Screw	BMZ30P050FZK	35	Cord(CN14)	CDE3970	
	3	Knob	CAA1316	36	Connector	CDE4164	
	4	Button	CAC3566	37	Terminal(CN5)	CKE1005	
	5	Cord Assy	CDE3955	38	Terminal(CN6)	CKE1032	
	6	Fuse	CEK1001	39	Auto Fuse Holder(CN2)	CKR1011	
*	7	Bracket	CNC4763	40	Pin Jack(CN1)	CKS1840	
	8	Panel	CNB1702	41	Connector(CN8)	CKS1940	
	9	Panel	CNB1703	42	Connector(CN7)	CKS2601	
	10	Badge	CAH1399	43	Connector(CN3)	CKS2602	
	11	Badge(UC)	CAH1427	44	Connector(CN4)	CKS2603	
		Badge(EW)	CAH1426	45	Holder	CNC2218	
	12	Heat Sink(UC)	CNR1320	46	Holder	CNC4753	
		Heat Sink(EW)	CNR1319	47	Holder	CNC4755	
	13	Lens	CNS2053	48	Holder	CNC4756	
	14	Cord	CDE3949	49	Holder	CNC4757	
	15	Screw	BMZ30P060FCU	50	Heat Sink	CNC4758	
	16	Chassis	CNA1513	51	Shield	CNC4761	
	17	Shield	CNC5042	52	Holder	CNC4910	
	18	Insulator	CNM3611	53	Clamper	CNV1443	
	19	Insulator	CNM3806	54	Holder	CNV3459	
	20	DSP Unit	CWE1290	55	Screw	PPZ20P060FZK	
	21	Case	CNC4759	56	Screw	PPZ30P080FZK	
	22	Shield	CNC4760	57	Connector(CN17)	CKS2197	
	23	Holder	CNC4909	58	Cord	CDE3960	
	24	Shield	CNC5033	59	Cord	CDE3951	
	25	Holder	CNC5038	60	Screw	BMZ40P050FMC	
	26	Connector(CN1019)	CKS2193	61	Fuse(FU951)	CEK1001	
	27	Connector(CN1021)	CKS2197	62	IC(IC551)	TA8225L	
	28	Connector(CN1020,1022)	CKS2203	63	Diode(D602)	PR3432S	
	29	Audio Control Unit	CWM3671				
	30	Screw	BMZ30P120FCU				
	31	Cord(CN10)	CDE3966				
	32	Cord(CN11)	CDE3967				
	33	Cord(CN12)	CDE3968				

10. PACKING METHOD

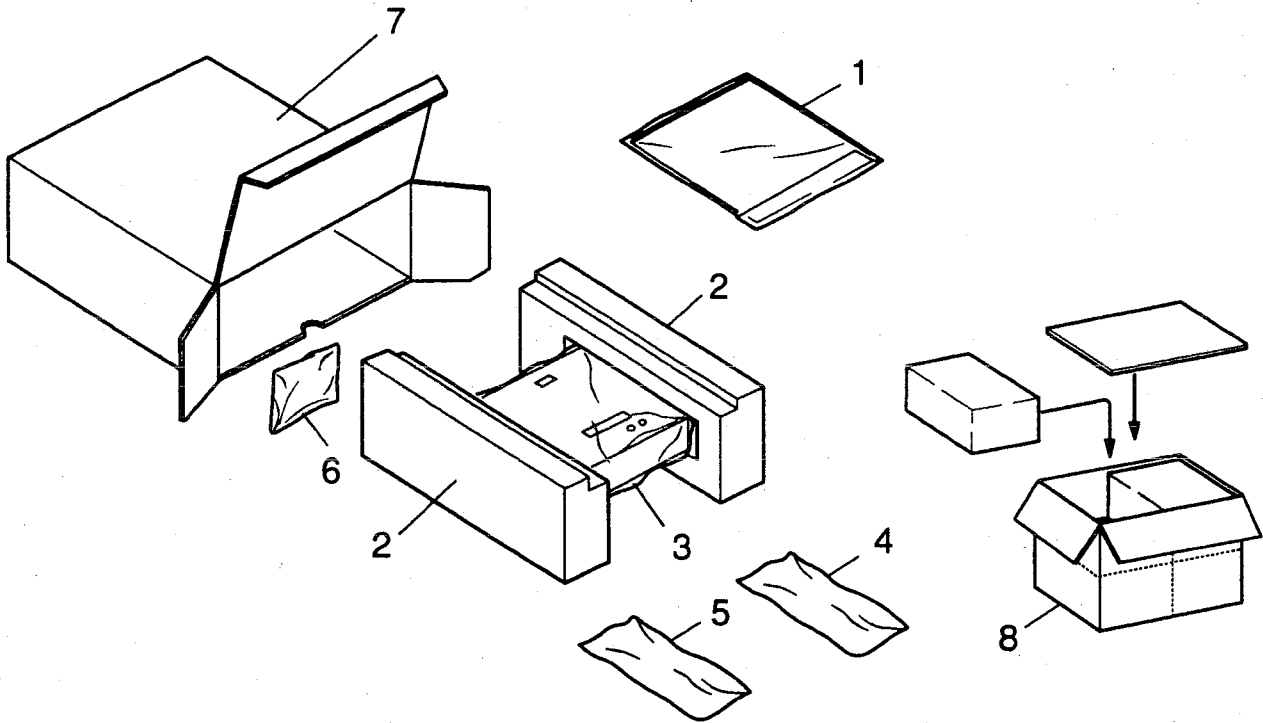


Fig.21

● Parts List

Mark	No.	Description	Part No.
	1-1	Owner's Manual(UC)	CRD1706
		Owner's Manual(EW)	CRD1659
		Owner's Manual(EW)	CRD1660
*	1-2	Warranty Card(UC)	CRY1053
*		Card(EW)	CRY-062
	1-3	Cover(18mm)	CNS2227
	1-4	Cover(25mm)	CNS2726
	1-5	Driver	CNV3579
*	1-6	Polyethylene Bag	E36-634
	2	Protector(x2)	CHP1578
	3	Cover	CEG1082
	4	Screw Assy	CEA1848
	4-1	Screw(x4)	BMZ40P050FMC
	4-2	Screw(x4)	BYC40P120FZK
	4-3	Screw	CBA1241

Mark	No.	Description	Part No.
	4-4	Shaft	CLP1100
*	4-5	Polyethylene Bag	E36-613
	5	Accessory Assy	CEA1849
*	5-1	Bracket(x4)	CNC4763
*	5-2	Polyethylene Bag	CEG-020
	6	Cord Assy	CDE3955
	7	Carton(UC)	CHG2330
		Carton(EW)	CHG2331
	8	Contain Box(UC)	CHL2330
		Contain Box(EW)	CHL2331

1-1 Owner's Manual

Part No.	Model	Language
CRD1706	RS-P50/UC	English, French
CRD1659	RS-P50/EW	English, Italian, French, German
CRD1660	RS-P50/EW	Spanish, Swedish, Dutch

11. ELECTRICAL PARTS LIST

NOTE:

- Parts whose parts numbers are omitted are subject to being not supplied.
- The part numbers shown below indicate chip components.

Chip Resistor

RS1/OS0000J,RS1/00S0000J

Chip Capacitor (except for CQS.....)

CKS....., CCS....., CSZS.....

====Circuit Symbol & No. Part Name=====	Part No.	====Circuit Symbol & No. Part Name=====	Part No.
Unit Number : CWE1290		R 1107 1108 1207 1208 1307 1308 1407 1408	RN1/10SE203D
Unit Name : DSP Unit		R 1109 1110 1209 1210 1409 1410	RN1/10SE473D
		R 1111 1112 1211 1212 1311 1312 1411 1412	RN1/10SE473D
		R 1113 1114 1213 1214 1313 1314 1413 1414	RN1/10SE511D
		R 1115 1116 1215 1216 1315 1316 1415 1416	RN1/10SE102D
MISCELLANEOUS			
IC 1001 1003 1004	PD0083A	R 1117 1118 1217 1218 1317 1318 1417 1418	RN1/10SE182D
IC 1005 1006 (HM628128LFPI-8)	GGF1028	R 1119 1120 1219 1220 1319 1320 1419 1420	RN1/10SE152D
IC 1100	SC7S04F	R 1150	RS1/10S105J
IC 1101 1201 1301	NJM2082M	R 1151 1152 1251 1252 1351 1352 1372 1451 1452 1501	RS1/10S102J
IC 1102 1202 1302 1402	NJM5532MD	R 1172	RS1/10S102J
IC 1150 1250 1350 1450	SM5872BS	R 1205 1206 1301 1302 1303 1304 1305 1306 1401 1402	RN1/10SE203D
IC 1401	NJM2082M	R 1309 1310	RN1/10SE473D
IC 1501	TC9237F	R 1403 1404 1405 1406	RN1/10SE203D
IC 1502	TA2009F	R 1502 1503	RS1/10S100J
IC 1601	CD0004AF	R 1504 1505 1506 1702 1703 1705 1708 1801 1802	RS1/10S102J
IC 1701	NJM3404AM	R 1510	RS1/10S473J
IC 1702	MC74HCU04F	R 1514 1613	RS1/10S473J
IC 1801	M51581FP	R 1601 1711	RS1/10S103J
Q 1601	DTC144EK	R 1602 1603	RS1/10S222J
Q 1602 1603 1701 1902	2SC2712	R 1604 1803 1813	RS1/10S102J
Q 1702	2SC1621	R 1605	RS1/10S822J
Q 1901	DTC144TK	R 1606	RS1/10S121J
D 1601	MA151WK-MT	R 1607	RS1/10S121J
D 1701	MA110-1A	R 1608 1805 1812	RS1/10S102J
D 1801	MA151WK-MT	R 1610	RA2CQ473J
L 1002 1003 1004 1005 Inductor	LCTA1R0K4532	R 1612 1616 1709 1710 1712 1909	RS1/10S103J
L 1006 1151 1251 1351 Inductor	LCTA1R0K4532	R 1614 1618	RS1/10S473J
L 1007 1008 1009 1010 Inductor	LCTB2R7K2125	R 1617	RS1/10S471J
L 1011 1012 1013 1014 Inductor	LCTB2R7K2125	R 1706	RS1/10S222J
L 1015 1016 Inductor	LCTB2R7K2125	R 1707	RS1/10S112J
L 1018 1019 1020 Inductor	LCTB2R7K2125	R 1713	RS1/10S101J
L 1451 1501 1705 Inductor	LCTA1R0K4532	R 1808 1809	RA2CQ102J
L 1502 Inductor	LCTBR39K2125	R 1810	RA4C473J
L 1601 1801 Inductor	LCTA1R0K4532	R 1902 1903 1904	RS1/10S0R0J
L 1703 1704 Inductor	LCTA2R7J3225	R 1905	RS1/10S0R0J
L 1901 Inductor	CTF1250	R 1907	RS1/10S473J
X 1150 VCO	CSS1103		
EF1150 EMI Filter	CCG1030		
EF1701 1953 1954 1955 EMI Filter	CCG1030		
RESISTORS		CAPACITORS	
R 1001 1013	RA2CQ472J	C 1005 1006 1008 1009 1010 1012 1013 1014 1016 1018	CKSQYB473K16
R 1002 1010 1014	RA3C472J	C 1007 1011 1015 1710	CKSQYB102K50
R 1003 1011 1015 1704 1804 1806 1807 1811 1814	RS1/10S473J	C 1017	CKSQYB473K16
R 1004 1012 1016	RA2CQ473J	C 1019 1020 1021 1602 1605 1606	CKSQYB473K16
R 1009	RA2CQ472J	C 1022 1023 1607 1610	CKSQYB473K16
R 1017 1018 1019 1025 1026 1027	RA4C102J	C 1025 1027 1029 1030	CSZSR100M6R3
R 1020 1028 1189 1289 1369 1469	RA3C102J	C 1028	CSZSR100M6R3
R 1021 1022 1032 1033	RA4C102J	C 1101 1102 1201 1202 1301 1302 1401 1402	CCSQCH620J50
R 1023 1024 1034 1035 1609	RA3C102J	C 1103 1104 1203 1204 1303 1304 1403 1404 1705	CCSQCH150J50
R 1036 1037 1044 1045 1048 1049	RS1/10S472J	C 1105 1106 1205 1206 1305 1306 1405 1406 1604	CCSQCH220J50
R 1038 1039 1046 1047 1050 1051 1052 1054 1055 1611	RS1/10S473J	C 1107 1108 1207 1208 1307 1308 1407 1408	CCSQCH200J50
R 1056	RS1/10S471J	C 1109 1110 1209 1210 1309 1310 1409 1410	CFHSQ562G16
R 1057	RS1/10S102J	C 1111 1112 1211 1212 1311 1312 1411 1412	CFHSQ822G16
R 1059	RS1/10S471J	C 1113 1114 1213 1214 1313 1314 1413 1414	CFHSQ122G50
R 1101 1102 1103 1104 1105 1106 1201 1202 1203 1204	RN1/10SE203D	C 1115 1116 1215 1216 1315 1316 1415 1416	CEV220M16

====Circuit Symbol & No. Part Name=====	Part No.	====Circuit Symbol & No. Part Name=====	Part No.
C 1121 1122 1222 1322 1502 1709 1802 1804	CKSQYB473K16	D 554	MA3056M
C 1123 1124 1159 1160 1163 1164 1165 1221 1223	CKSQYB473K16	D 555	ERA15-02VH
C 1150	CKSQYB473K16	D 602	PR3432S
C 1157 1158 1161 1162 1166 1257 1258 1261 1262 1266	CEV470M6R3	D 607 608 609	MA110-1A
C 1167 1267 1367 1467	CCSQL331J50	D 611 612	MA110-1A
C 1168 1169 1268 1269 1368 1369 1468 1469	CKSQYB473K16	D 652 653	RD24MB2
C 1224 1259 1260 1263 1264 1265 1321 1323 1324 1359	CKSQYB473K16	D 654	HZM16N83
C 1357 1358 1361 1362 1366 1457 1458 1461	CEV470M6R3	D 655	MA110-1A
C 1360 1363 1364 1365 1423 1424 1459 1460 1463	CKSQYB473K16	D 801 803 804	MA110-1A
C 1421	CKSQYB473K16	D 802	MA3075H
C 1422	CKSQYB473K16	D 951 954	MA3056M
C 1462 1466 1501 1507 1509 1608 1609 1971 1972	CEV470M6R3	D 952	MA3068M
C 1464 1465 1503 1504 1505 1506 1508 1713 1715 1801	CKSQYB473K16	D 953	ERA15-02VH
C 1516	CEV100M16	L 50 51 52	CTH1109
C 1601 1706	CKSQYB103K25	L 66 67 86 87	CTH1110
C 1603 1714 1803	CEV220M6R3	L 601 602 651 702	Inductor
C 1708	CKSQYB221K50	L 603 604 605 606	Inductor
C 1711 1712	CKSQYB222K50	L 607 608	Inductor
		L 610	Inductor
		L 611	Inductor
		L 612	Inductor
		L 630 632 633 648	Inductor
		L 650	Inductor
		L 652	Inductor
		L 682 683	Inductor
		L 701	Inductor
		L 801 809 810	Inductor
		L 802 803 804 805	Inductor
		L 806 807	Inductor
		L 808 811 812 813	Inductor
		L 814 815 816 817	Inductor
		L 818 819	Inductor
		L 820	Inductor
		L 821 822 823 824	Inductor
		L 825 826 827	Inductor
		L 951	Choke Coil
		L 952 953 954	Inductor
		L 955	Coil
		T 66 86	Transformer
		RY 551	Relay
		X 801	Ceramic Resonator
		X 651	Ceramic Resonator
		SW601	Switch
		SW602 603	Switch
		FU 951	Fuse 4A
		EF 159 160 259 260	EMI Filter
		EF 359 360 459 460	EMI Filter
		EF 951	EMI Filter
		EF 952	EMI Filter
		RESISTORS	
		R 1	RS1/10S152J
		R 2	RS1/10S152J
		R 3 4	RS1/10S102J
		R 50 66 86	RS1/10S122J
		R 51 63	RS1/10S223J
		R 52 68 88	RS1/4S681J
		R 53 69 89 121 122 133 134 321 322 333	RS1/10S101J
		R 54 73 74 80	RN1/10SE103D
		R 55	RN1/10SE302D
		R 56	RS1/10S473J
		R 57	RN1/10SE223D
		R 58 75	RS1/10S474J
		R 59	RS1/10S333J
		R 60 61	RS1/10S221J
		R 62 606 635 636 639 640 647 684 685	RS1/10S473J

Audio Control Unit

Consists of

Switch P.C.Board

Audio Control P.C.Board

Unit Number : CWM3671

Unit Name : Audio Control Unit

MISCELLANEOUS

IC 1 2

IC 50

IC 66

IC 103 303

IC 104 203 304 403

IC 151 251 351 451

IC 501

IC 502

IC 551

IC 601

IC 602

IC 603

IC 651

IC 652

IC 653

IC 654

IC 951

Q 1 2 552

Q 50 66 86

Q 51 67 87

Q 52 53 68 88

Q 54

Q 151 152 153 154 251 252 253 254 351 352

Q 353 354 451 452 453 454 553

Q 554

Q 555 803

Q 601 952

Q 602 606

Q 607 608 609 953 954 956 958

Q 801 957 980

Q 802 961

Q 951

Q 955

Q 959

D 50

D 66 86

D 151 152 153 154 251 252 253 254 351 352

D 353 354 451 452 453 454 601 603 604 605

D 501

D 551 552 957 958 959

PMJ003A

TL5001PS

TL1451ANS

BA3129F

NJM2082M

NJM5532MD

UPC4570G

PMJ003A

TA8225L

PD5212A

PD4452A

S-80735AN-DZ

PA0051AM

PD4308AM

M51946BFP

TC7S00F

PML001A

DTA114EK

2SA1797

2SC2812

2SA1179

DTC124EK

2SD1757K

2SD1757K

2SC2712

2SC3113

2SA1162

DTC114EK

2SC2712

2SB1238

2SC2712

2SD1760F5

2SA1162

2SD1864

SB803-06

SCB02-06

MA110-1A

MA110-1A

MA3043M

ERA15-02VH

D 554

D 555

D 602

D 607 608 609

D 611 612

D 652 653

D 654

D 655

D 801 803 804

D 802

D 951 954

D 952

D 953

L 50 51 52

L 66 67 86 87

L 601 602 651 702

L 603 604 605 606

L 607 608

L 610

L 611

L 612

L 630 632 633 648

L 650

L 652

L 682 683

L 701

L 801 809 810

L 802 803 804 805

L 806 807

L 808 811 812 813

L 814 815 816 817

L 818 819

L 820

L 821 822 823 824

L 825 826 827

L 951

L 952 953 954

L 955

T 66 86

RY 551

X 801

X 651

SW601

SW602 603

FU 951

EF 159 160 259 260

EF 359 360 459 460

EF 951

EF 952

RESISTORS

R 1

R 2

R 3 4

R 50 66 86

R 51 63

R 52 68 88

R 53 69 89 121 122 133 134 321 322 333

R 54 73 74 80

R 55

R 56

R 57

R 58 75

R 59

R 60 61

R 62 606 635 636 639 640 647 684 685

====Circuit Symbol & No. Part Name=====	Part No.	====Circuit Symbol & No. Part Name=====	Part No.
R 64	RN1/10SE182D	R 655 662 663 664	RS1/10S222J
R 67 87 167 168 267 268 367 368 467 468	RS1/10S103J	R 656 657	RS1/10S103J
R 70 90	RN1/10SE303D	R 679 680 681	RS1/10S302J
R 71	RN1/10SE622D	R 686 687 688 689 954 955 958 959 961	RS1/10S473J
R 76	RN1/10SE912D	R 690 691	RS1/10S302J
R 77	RN1/10SE153D	R 692 693	RS1/10S302J
R 78	RN1/10SE273D	R 694	RS1/10S473J
R 81	RN1/10SE103D	R 695	RS1/10S474J
R 82	RN1/10SE392D	R 701	RS1/10S391J
R 91	RN1/10SE432D	R 821 822 823 966 968	RS1/10S103J
R 92	RN1/10SE222D	R 824 963 971	RS1/10S473J
R 123 124 323 324 610	RS1/10S472J	R 825	RS1/2S102J
R 125 126 325 326	RS1/10S332J	R 826	RS1/10S102J
R 127 128 327 328	RS1/10S182J	R 827 952	RS1/10S473J
R 129 223 224	RS1/10S472J	R 951	RS1/10S472J
R 131 132 221 222 331 332 421 422	RS1/10S272J	R 957	RS1/10S472J
R 153 154 253 254 453 454	RS1/10S102J	R 965 969	RS1/10S472J
R 155	RS1/10S302J	R 967	RS1/10S102J
R 156 255 256 355 356 455 456	RS1/10S302J	R 970	RS1/10S103J
R 157 158 257 258 358	RS1/10S103J	R 972	RS1/8S1R0J
R 159 160 161 162 259 261 359 360	RS1/10S471J	R 973	RS1/10S4R7J
R 163 164 363 364 463 464	RS1/10S223J		
R 165 166 265 266 365 366 465 466	RS1/10S103J	CAPACITORS	
R 260 262	RS1/10S471J	C 1 962	CKSQYB103K25
R 263 264	RS1/10S223J	C 2 603 952 969	CKSQYB103K25
R 334 608 665 666	RS1/10S101J	C 3 4 9 10 11 12 704 958	CKSQYB104K25
R 353	RS1/10S102J	C 5 6	CEAS2R2M50
R 354	RS1/10S102J	C 7 8	CEAS100M25
R 357 457 458	RS1/10S103J	C 13 14 515 951 959 960 977	CEA470M16LL
R 361 362 459 460 461 462 618	RS1/10S471J	C 15 16 17 18 20	CEA470M16LL
R 423 424 609 953 960 962	RS1/10S472J	C 50 52 56 58 39μF/25V	CCH1162
R 511	RS1/10S103J	C 54	CKSQYB331K50
R 512	RS1/10S152J	C 55 61 70 71 80 81 90 91	CKSQYB102K50
R 513	RS1/10S222J	C 59 75 95 651 653 654	CKSQYB102K50
R 514	RS1/10S563J	C 60 76 77 97	CKSQYB222K50
R 516	RS1/10S102J	C 62 79	CKSQYB104K25
R 517	RS1/10S104J	C 66 68 72 73 39μF/25V	CCH1162
R 551 565	RS1/10S122J	C 74 86 88 39μF/25V	CCH1162
R 552	RS1/10S103J	C 78	CCSQCH221J50
R 553	RS1/10S102J	C 82	CEHAS010M50
R 554	RS1/10S153J	C 92 93 94 39μF/25V	CCH1162
R 555	RS1/10S473J	C 117 118 217 218 317 318 417 418	CEA4R7M35LL
R 556	RS1/10S473J	C 119 120 219 220 319 320 419 420	CEWAR4R7M25
R 557	RS1/10S620J	C 125 126 127 128	CFTXA684J50
R 558	RS1/10S620J	C 129 130 329 330 602 652 702 703	CKSQYB104K25
R 559	RS1/10S302J	C 131 132 161 162	CKSQYB104K16
R 560	RS1/10S302J	C 151 152 251 252 351 352 451 452	CEZA220M25
R 561 562 566 567	RS1/8S2R2J	C 153 154 253 254 353 354 453 454	CEZA100M16
R 564 638 641 644	RS1/10S103J	C 155 156 255 355 356 455 456	CCSQSL471J50
R 572	RS1/10S472J	C 157 158 357 358	CCSQCH100D50
R 573	RS1/8S332J	C 221 222	CKSQYB104K16
R 574	RS1/10S473J	C 256	CCSQSL471J50
R 605	RS1/10S302J	C 257 258 457 458	CCSQCH100D50
R 607 629	RS1/10S103J	C 261 262 361 461	CKSQYB104K16
R 612	RS1/10S302J	C 325 326 327 328	CFTXA684J50
R 613 620 624 651 652	RS1/10S102J	C 331 332 362	CKSQYB104K16
R 614 615 616 621 622 623 625 626 627	RS1/10S473J	C 421 422 462	CKSQYB104K16
R 617	RS1/10S102J	C 510 511	CEA010M50NPLL
R 619	RS1/10S102J	C 512	CEWAR100M16
R 634 658 659 660 661	RS1/10S473J	C 513	CKSQYB103K25
R 642	RS1/2S102J	C 514 521 522 523 524 525 526 530 531	CKSQYB104K16
R 643	RS1/10S104J	C 516	QOMA222J50
R 645	RS1/2S681J	C 517	CKSQYB473K16
R 649	RS1/10S473J		
R 653 654	RS1/10S222J		

====Circuit Symbol & No. Part Name=====	Part No.
C 519	CEA470M16LL
C 520	CKSQYB103K25
C 528	CEA2R2M50LL
C 529	CEA100M16LL
C 551	CEZA010M50
C 552	CKSQYB103K25
C 553	CEA010M50LL
C 554	CEAS470M16
C 555 556	CEAS101M16
C 557 558 470 μ F/16V	CCH-114
C 559 560	CFTXA473J50
C 562	CEZA010M50
C 601	CKSYB104K16
C 604	CEA470M16LL
C 608	CEA100M16LL
C 609 617 618 656	CKSQYB104K16
C 610 611 612 619 620	CKSQYB104K16
C 613 614 631	CKSQYB102K50
C 615 616	CKSQYB102K50
C 621	CKSQYB103K50
C 622 623 624 626 627 628 629 630	CKSQYB102K50
C 655	CKSQYB102K50
C 657	CKSQYB103K25
C 659 660	CCSQCH471J50
C 801	CEA470M25LL
C 953	CEA101M6R3LL
C 954 0.47 μ F/5.5V	CCL1016
C 955	CKSQYB102K50
C 956	CKSQYB102K50
C 961	CKSQYB473K16
C 967 4700 μ F/16V	CCH1068
C 968	CKSQYB104K25
C 976	CKSQYB102K50
C 978	CEA470M16LL

Miscellaneous Parts List

FU 1	Fuse 4A	CEK1001
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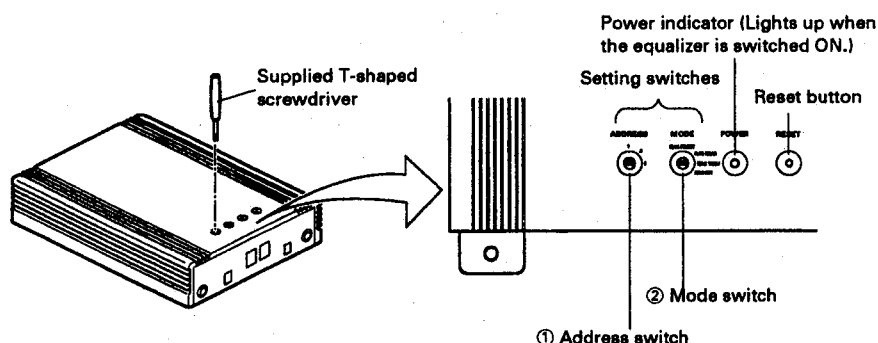
12. OPERATIONS AND CONNECTION

Setting of this unit

This unit has two setting switches: address and mode. Set these switches according to your system. Incorrect setting will result in improper operation of the ODR System.

Switching the setting

1. **Change the setting of the switches using the T-shaped screwdriver supplied with the equalizer.**
 - > Keep the supplied T-shaped screwdriver in a safe place.



2. **Press the Reset button.**

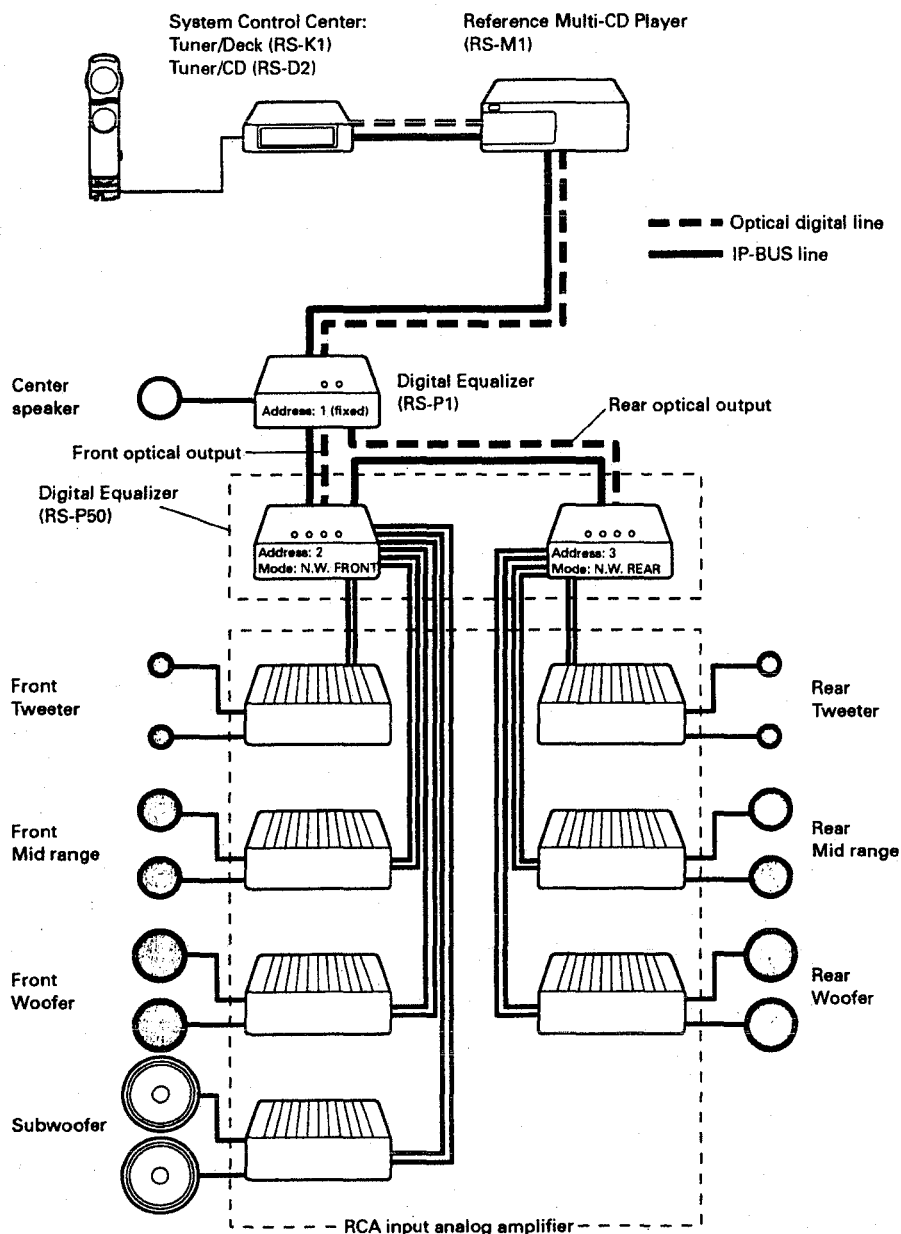
Always press the Reset button after changing a setting switch (see "Reset Button"). Otherwise the new setting will not be registered.

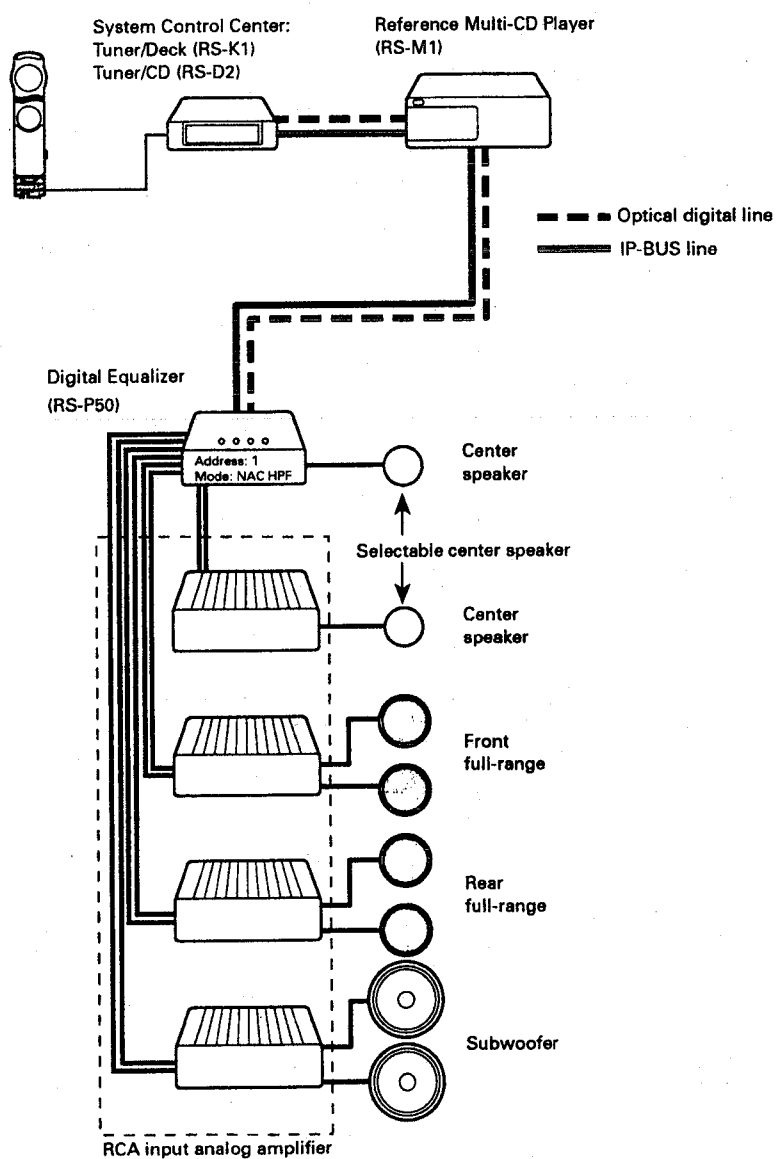
Setting Example

- > Read the manual of the ODR System Control Center for specific setting examples.

Using the RS-P50 for digital network (Example of maximum system connection)

- > Connect the center speaker to the center speaker output of the digital equalizer which is assigned as Address 1. No sound will be output when the speaker is connected to the center speaker output of the digital equalizer assigned as either Address 2 or 3.
- > To ensure better sound quality, connect the subwoofer to the front OUT. (Although the subwoofer should be connected to the front OUT, it may be installed to either front or rear.)



Setting of this unit
Using the RS-P50 for NAC


① Address setting

Multiple audio units* such as the RS-P50 Equalizer and Digital Amplifiers can be connected to the ODR System. Therefore, each audio unit must be assigned an address as identification number (1 to 8).

Set the address according to the following rules:

- Set a unique address to each audio unit.
- The first audio unit must be assigned to Address 1.
- If the Digital Equalizer RS-P1 is included among the audio units, it must be assigned as Address 1. Therefore, assign either Addresses 2 or 3 to the Digital Equalizer RS-P50.
- > The RS-P1 is fixed to Address 1, and this setting cannot be changed.
- If the Digital Equalizer RS-P1 is not used, assign Address 1 to one of the RS-P50.

② Mode setting

Set the mode of the RS-P50 according to your system.

N.W. FRONT (network/front) mode

N.W. REAR (network/rear) mode

Set to this mode when using the unit as a digital network. To output front audio from RCA OUTPUT, set to N.W. FRONT. To output rear audio from RCA OUTPUT, set to N.W. REAR.

RCA OUTPUT: Outputs high-range, mid-range, low-range and subwoofer audio.

Optical OUTPUT (Address1): Outputs signals with reversed channels from front/rear of RCA OUTPUT.

(Address 2 or 3): Outputs signals as they are from Optical INPUT.

NAC THRU mode

NAC HPF (high-pass filter) mode

Set to this mode when using the unit as NAC (Natural Acoustic Control). Setting is possible only when the unit is assigned as Address 1.

RCA OUTPUT: Outputs center speaker, front, rear and subwoofer audio.

Optical OUTPUT: Outputs front signals.

When the unit is set to NAC THRU, front/rear output will be full range. When the unit is set to NAC HPF, a high-pass filter of 100 Hz will be applied only to front/rear output. Set the unit to NAC HPF when using the subwoofer.

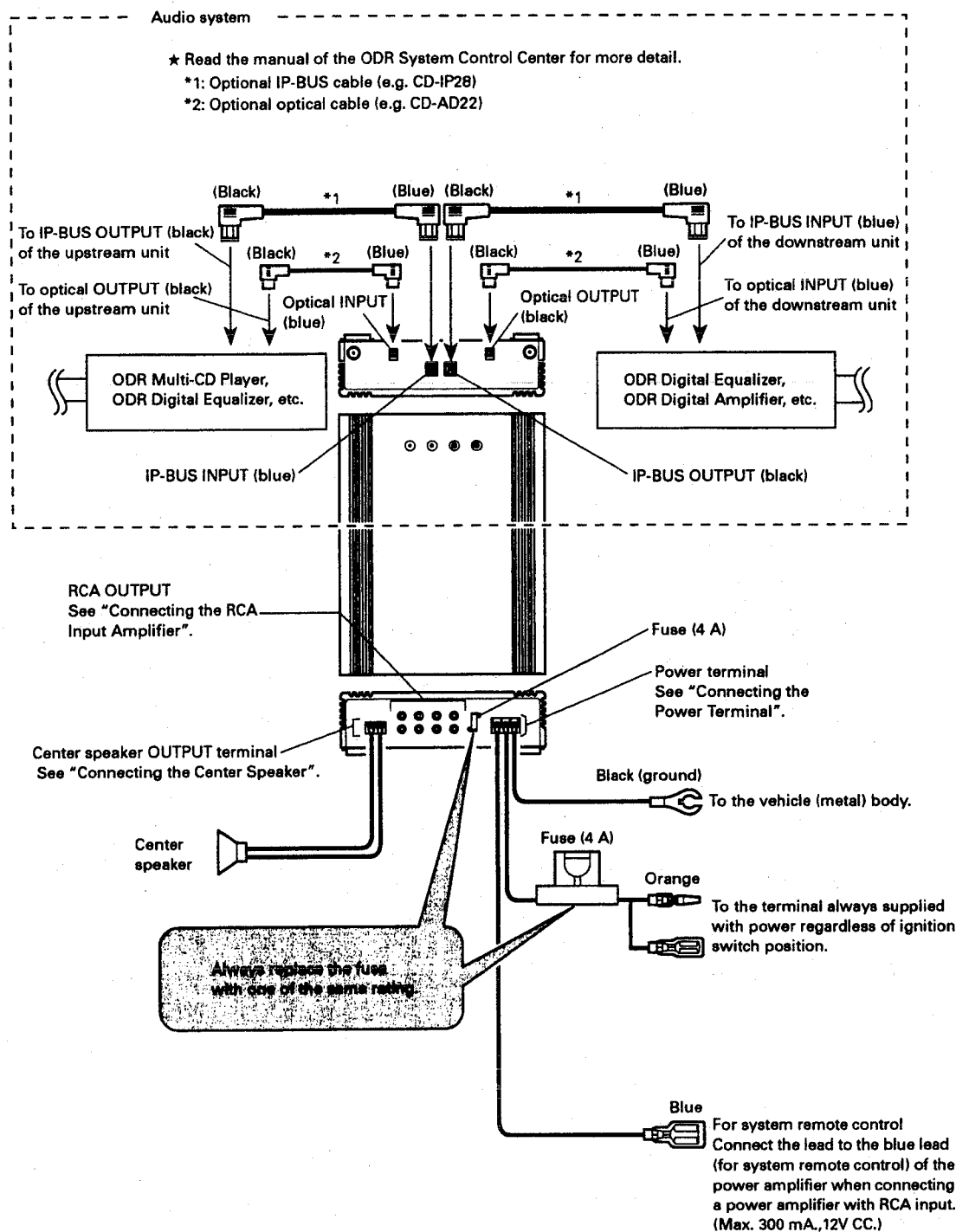
* Audio units

By definition, audio units are Digital Amplifiers, Digital Equalizer and other audio equipment for the ODR System including the following:

- Dual 1/3 Octave Digital Equalizer [RS-P1]
- Universal Digital Preamp/Equalizer [RS-P50]
- Digital "Pure Class A" Integrated Amplifier [RS-A1]
- Digital "Class A" Integrated Amplifier [RS-A2]

Connecting the Units

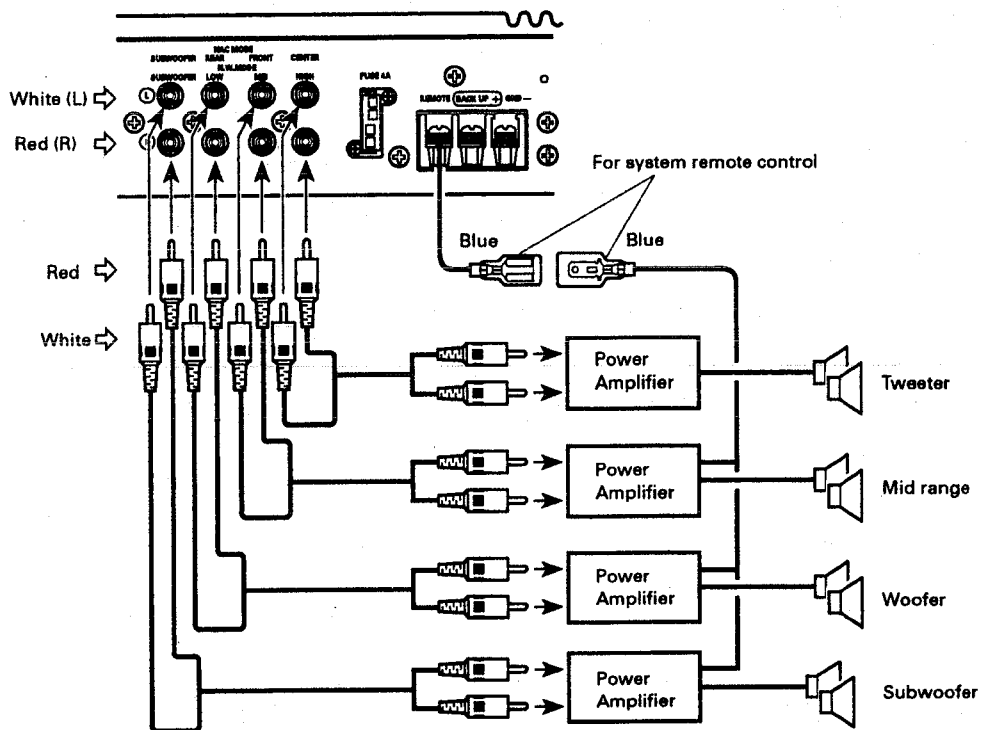
Connection Diagram



Connecting the RCA Input Amplifier

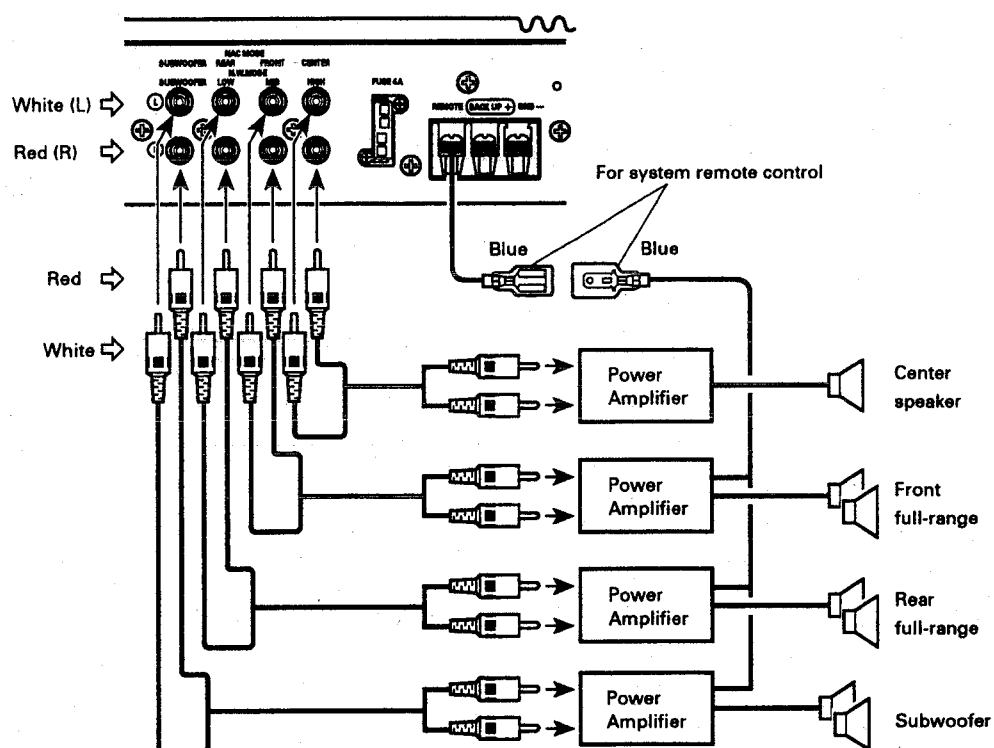
Connect the RCA Input Power Amplifier according to the purpose of the speaker to be connected to the system.

Network mode (N.W. FRONT/N.W. REAR)



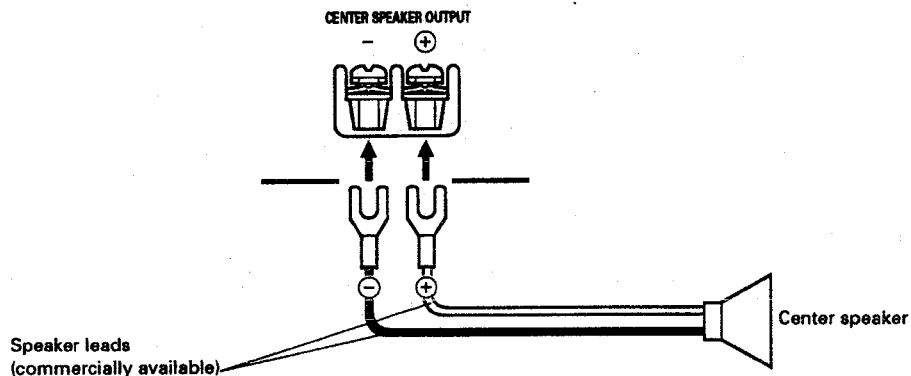
Connecting the Units

NAC mode (NAC THRU/NAC HPF)



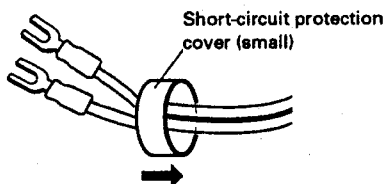
Connecting the Center Speaker

When the equalizer is assigned as Address 1, the center speaker can be connected to the center speaker output terminal.



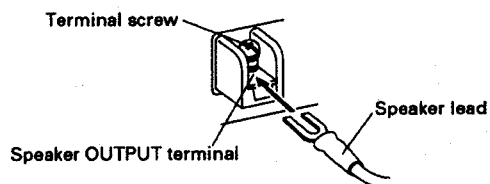
Connecting the speaker terminal

1. Put the short-circuit protection cover (small) around the speaker leads.

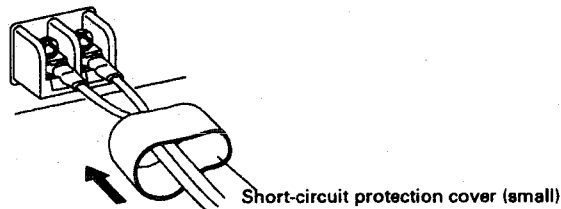


- Be sure to use this cover to prevent short-circuit.

2. Connect the speaker leads to the speaker terminal.



- Fasten the speaker leads firmly with terminal screws.



3. Cover the entire terminal with the short-circuit protection cover (small).